MECHANIX ILLUSTRATED

THE HOW-TO-DO MAGAZINE

Sept 58

Best Buy 25c SEPTEMBER

ALL ABOUT TAPE RECORDERS

Tom McCahill Tests The NEW Small Ford

SPECIAL REPORT ON ... RS

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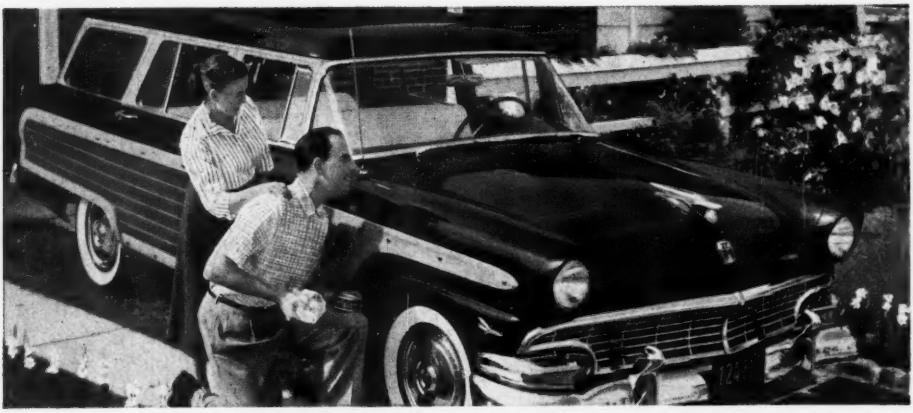
"Cleaning and waxing my car took 1¼ hours



with Du Pont's NEW CAR WAX

. . . it's still sparkling after 6 months"

says Bill Dec of Huntington, N. Y., after waxing his '56 Ford with Du Pont New Car Wax. Bill discovered that this new paste wax is as easy to use as a liquid polish, because it cleans, waxes and glazes—all in *one easy application*. Yet it protects with real Carnauba wax, *the toughest wax known*. Proof of protection is the long-lasting gleam. Six months, 12 car washings later, the finish still shows clear reflections of Bill and his wife! Try Du Pont New Car Wax—it makes any good finish look new! At service stations and auto supply stores. Only $2.00.

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Costs *pennies* a day

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Page 53

Page 62

Page 64

SPECIAL FEATURES

America's Small Cars.....*Robert G. Beason* 53
Grasshopper Infantry.....*Frank Tinsley* 64
Little Soldiers—Big Hobby.....*Ed Morris* 76
Ten Things You Never Knew About Women *Lester David* 81
More Fun From Your Tape Recorder....*Michael Sheridan* 86
How To Roll Your Own Business.....*Harry Kursh* 94

TOM McCAHILL

Mail For McCahill 47
Tests The Ford Taunus..... 72

REGULAR FEATURES

MIMI 63
It's New! 66
MMI: Their Business Takes The Cake....*Marianne Besser* 70
Hunting & Fishing: Surf Fishing For Stripers *Wynn Davis* 78
Bright Idea: Disposable Paint Roller..... 84
Inventions Wanted 91

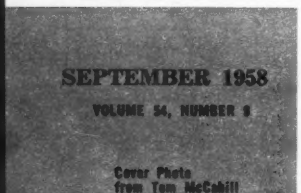
SHORT FEATURES

Miss Liberty's Mr. Fixit..... 60
Boat On Stilts/Beam On Wheels..... 62
Atom-Powered Merchant Ship..... 80
Rin Tin Tin's Secret Radio..... 85
Midget Machine Shop..... 90
Newest Sport—Racing Miniature Cars..... 92

DEPARTMENTS

Dear Editor 18
Invention Clinic 22

(CONTINUED ON PAGE 6)



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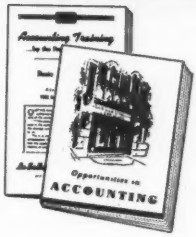

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CAPTAIN PETE'S TREASURE HUNT CONTEST

$1,000.00

FIRST PRIZE

2nd PRIZE $100
3rd PRIZE $50
4th to 20th PRIZES, each $5

No Box-Tops! No Jingles! No Statements!

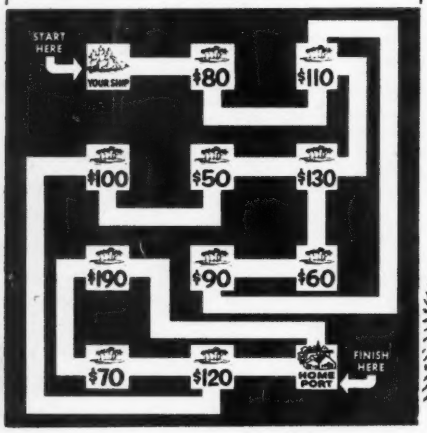
Solve The Puzzle Below
ENTER CONTEST FREE!

HEAVE TO, my hearties, here's a treasure hunt that's really fun. This Free Entry Treasure Hunt Contest is sponsored by Ingram Lather Shaving Cream and Razor Blades and there's plenty of loot for you to find! Just sail your ship from isle to isle and pick up the booty! Whoever finds the most treasure in accordance with the official rules wins First Prize of $1,000.00 Cash . . . and there are other Cash Prizes for other skillful treasure hunters. This is a puzzle contest that's really exciting . . . and everyone in the family can enter! The Sample Solution at right shows you how to find $590.00 in treasure . . . try the puzzle now and see if you can't do better! PRIZES WILL BE AWARDED ON THE BASIS OF SKILL ALONE! This is your opportunity to win . . . it's all up to you! It's fascinating, it's fun . . . it's easy to understand! There must be a winner for each prize . . . you have just as much opportunity as anyone else! Send in your entry today!

HIGH CORRECT SCORE FOR THIS PUZZLE WILL BE MAILED TO EACH ENTRANT WITHIN *14 DAYS!*

HOW TO SOLVE THIS PUZZLE

Simply trace out a route from "YOUR SHIP" to "HOME PORT" on the Puzzle Diagram below. Trace your route only along white ship lanes from island to island and collect the "treasure" from each island you visit. The idea is to collect as much treasure as possible.



EASY RULES

1. HOW TO ENTER Send in your solution on the Entry Coupon below. First trace out a route from "Your Ship" to "Home Port" on the puzzle diagram. Trace your route only along white ship lanes from island to island. Visit no island (white squares) more than once—and travel on no ship lane (white lines between islands) more than once! Collect all the treasure indicated on each island you visit. On coupon, list in the order you visited each island, the amount of treasure you found on each island plus the total amount of treasure you found! *Collect no treasure from islands you did not visit!*

2. PRIZES Contestants finding the most "treasure," in accordance with the official rules, will win the prizes, which will be awarded in order of relative scoring rank.

3. WHO MAY NOT ENTER This contest is closed to employees, agents, relatives, and others connected with this contest, including anyone who has won over $500 in a puzzle contest prior to January 15, 1958. Please note there is only one Captain Pete Contest. Do not enter more than once.

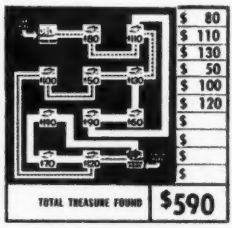
4. TIES Ties are to be expected, in which event tied-for prizes will be reserved until ties are broken. Such tied contestants will compete in as many additional FREE puzzles as required to break ties, but not to exceed eight more, after which if ties still exist, duplicate prizes will be awarded. Tie-breakers will be similar to the entry puzzle but more difficult. Each tiebreaker puzzle will be required to be solved and judged only if ties still exist after the judging of the preceding puzzle. No payments or purchases of any kind will be required with tie-breaking submissions *to compete for the* $1000 *First Prize and the other prizes listed in the headline, including the Bonus Prize.* At least 3 days will be allowed for the solution of each mailed tiebreaker. If necessary, tied contestants may be required to do one or more tie-breaking puzzles under supervision and without assistance in a 2-6 hour period per tiebreaker. Sponsor has right to make such further rules as sponsor deems necessary for proper conduct of contest.

5. DATES Entries must be postmarked not later than Nov. 29, 1958. Everyone in the family may enter—but only one entry per person. Each entry must be accompanied by a stamped, self-addressed envelope. *Entries NOT accompanied by a stamped, self-addressed envelope may be disqualified!* You may draw by hand a facsimile of the Entry Coupon and use it to enter. Neatness does not count but illegible or incorrectly scored entries will be disqualified. Sponsor has right to offer increased, additional or duplicate prizes. Contest subject to applicable State and Federal regulations. All submissions become property of sponsors. Judges' decisions final. Sponsors not responsible for lost or delayed mail or delivery thereof. Prize money on deposit in bank. *HIGH SCORE for this puzzle will be mailed to each entrant within 14 DAYS of date entry is received.* This FREE ENTRY Contest is sponsored by Ingram Lather Shaving Cream and Ingram Razor Blades. We hope that you enjoy this contest and that the next time you purchase Shaving Cream or Razor Blades you will ask for Ingram.

6. BONUS PRIZE Get someone else to enter this contest and you will receive a Bonus Prize of an extra $500 cash if you win First Prize! To prove you were responsible for your friend or relative entering, have him print your name on the *back of his or her* Free Entry Coupon. He can make a facsimile (copy) of the entry coupon Send in your Free Entry Coupon NOW—have him send in his Free Entry Coupon in a separate letter including his own stamped, self-addressed envelope.

SAMPLE SOLUTION

This Sample Solution shows you how to find $590 by visiting only 6 islands. So you can see this is not a very good solution. To get the best solution you should visit as many islands as possible and collect as much "treasure" as possible. Now try the puzzle yourself!



NOW AVAILABLE AT YOUR DRUGGIST'S

for men who shave UP!
INGRAM
INGRAM

ENTRIES NOT ACCOMPANIED BY A 4¢ STAMPED, SELF-ADDRESSED ENVELOPE MAY BE DISQUALIFIED

SEND IN COUPON ONLY—DON'T SEND PUZZLE ITSELF

FREE ENTRY COUPON

In the order you visited the islands, list in the column at right the amount of "treasure" you found on each island, and the total "treasure" you found.

NAME .....

ADDRESS .....

CITY ..... ZONE ..... STATE .....

☐ I enclose a 4¢ *stamped*, self-addressed envelope.

MAIL TO: CAPTAIN PETE
Box 1492, Grand Central Station
New York 17, N. Y.

$
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TOTAL TREASURE FOUND $

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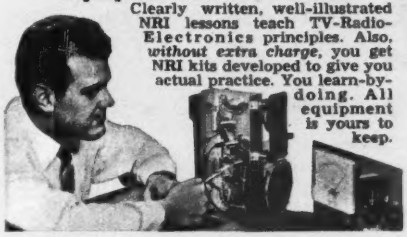

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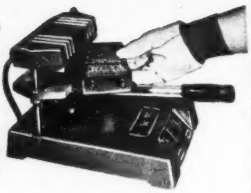

Home operators now MAKE $9.20 AN HOUR in business once controlled by a few big companies

Amazing new rubber molding invention puts you in business for yourself. Now, for the first time, the profitable rubber stamp industry is open to individuals. Here is an opportunity to start small in spare time in your own home. Keep your job until you're making enough to be independent of time clocks and bosses.

At one time only big companies could make rubber stamps because it required expensive machinery. People who wanted special stamps had to send cash in advance, wait days, or even weeks, and still run the chance of disappointment. This sensational invention changes all that.

Today, home operators like yourself can make rubber stamps. You take 27 cents of material, run it through this machine, and come up with a perfect stamp worth $1.80. That's a $1.53 profit on every stamp. Anyone can do it—it's not hard at all. This machine runs on an ordinary electrical outlet and it will fit your kitchen table top. You can make special stamps like the ones for people's names and addresses, the ones offices use to mark packages, identify products—in fact, any kind of stamp at all.

Now, the big manufacturers still use expensive machines costing as much as $3,000. They set the high prices for rubber stamps, ranging from $1.80 up. You can make these stamps much cheaper with this inexpensive machine. So your profit is much greater—as much as $9.20 every hour.

Act quickly to take advantage of this offer. Get a head start. Just fill out the coupon below. We'll mail you free information without obligation. We tell you all about this machine, how to get started in spare time, how to get orders coming in eight different ways—everything you need to know to succeed.

Here is your chance to get out in front and stay there in a fascinating new branch of an old, established highly profitable business. Mail this coupon for free facts today.

RUBBER STAMP DIV., 1512 Jarvis Ave.
DEPT. R-4-K - - - CHICAGO 26, ILLINOIS

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Name.....

Address.....

City..... *Zone*..... *State*.....

MI HOME CRAFTS SHOP

continued from page 2

HOME AND SHOP FEATURES

The Vise 96
Tool Bar 99
Electrified Tote Box 102
Automobile Umbrella Scabbard 104
Hotspur 106
Corner Hi-Fi Cabinet 110
A Grandmother's Clock 116
Log Cabin Construction 126

PAINTING

Fresh Paint Tips 113

BOATING

Vanishing Mess Table 124
Beverage Butler 125

AUTOMOTIVE

Front Wheel Bearings 134

PHOTOGRAPHY

Monthly Photo Contest 138
Photography Today 140
Editing Home Movies 142

ASTRONOMY

The Amateur Telescope Maker's Page 148

DEPARTMENTS

What's New? 29
Home And Shop Shorts 114
MI's Hardware Store 120
Golden Hammer Award Winners 122

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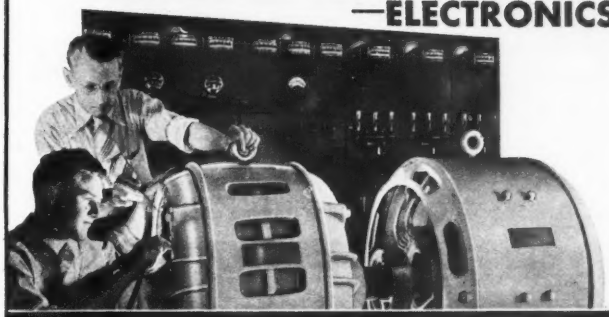

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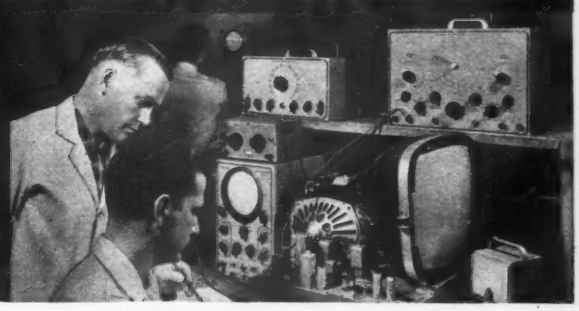
(Right — Instructor helping students check the wiring and trace circuits of television receivers.)



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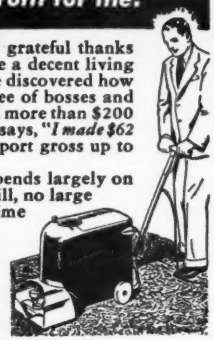

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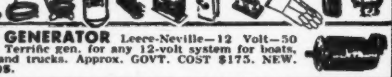

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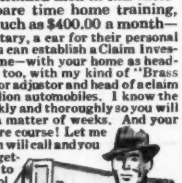

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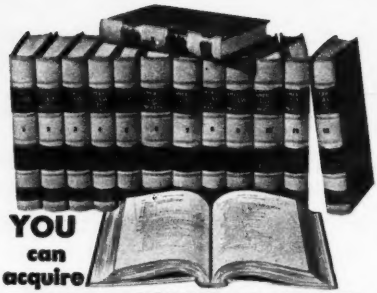

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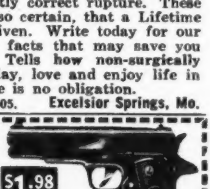

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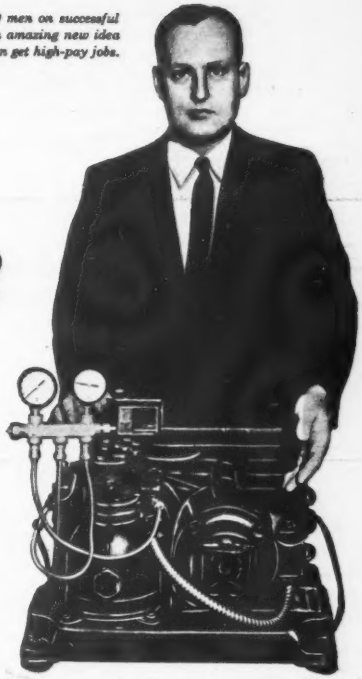
R. C. Anderson has launched nearly 50,000 men on successful careers. In this article he tells you about an amazing new idea which is helping many ambitious men get high-pay jobs.



Is This the Answer to Your Prayer for Success and Security?

By R. C. ANDERSON, President

GOOD TIMES can turn sour mighty fast. One day you've got what looks like a nice job, with plenty of overtime. Next day the foreman tells you about the big layoff until further notice. Or, worse yet, you have an unskilled job that doesn't pay much. If the company starts cutting back—boom!—you're the first to get the ax. It used to be that when unemployment went up, prices went down. But no more! Prosperity or recession, the cost of living just keeps on climbing and climbing. It's real tough trying to stretch your savings to get past the rainy day.

You're fed up with a shaky job that leads nowhere. You'd like steady work with a promise of security. Better yet—a good job with an opportunity to become a highly-paid success! Picture the advantages of a top income: A modern home; a late-model car; an education for the kids; care-free vacations in America's wonderlands—and a bank account that keeps growing! You wonder, "Are such things for me? Why, I don't even have an elementary school education—how can I make the grade at my age?" I can assure you that thousands of men just like you have done it. Thousands more will. The question is: Are you willing to make an honest effort to prepare yourself for success and security?

Let's Choose Your Field

I assume you have the determination to give yourself another chance to make good. The next step is to choose your field—to select the type of job that pays more money, offers steadier work, gives you real opportunities to start a business of your own. *My considered suggestion is that you get into the repairing industry* (which includes installation and maintenance.)

Your best bet, by far, is to become a mechanic in the uncrowded Air Conditioning and Refrigeration field. Here's why: It's one of America's great industries, yet growing like an infant. Over 150,000,000 units are in use today—and the manufacturers produce nearly 6,000,000 additional air conditioners, refrigerators, freezers, milk coolers, and industrial units annually.

How You Get Ready

Yes, the Air Conditioning and Refrigeration industry is expanding so fast that 20,000 newly-trained mechanics are needed each year! They are needed to install and repair units in homes, stores, offices, restaurants, factories, motels and transport systems. The pay? It's terrific! Earnings of around $150 a week are not at all unusual.

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Start Cashing In Soon

I show you how to make money as you train, supplement your regular pay. My training is practical, much like field calls. Most of my students do part-time work soon after enrolling. Some get jobs with dealers, others make calls on their own. A number sign service contracts with food stores, meat markets, restaurants, etc. With their earnings, students pay tuition, buy additional shop equipment, often have enough left to open a savings account.

Go In Business

Doing repair work for profit as you train gives you an ideal foundation for going in business for yourself. Should you work evenings or week-ends with a dealer, or even as free-lance, you are bound to make friends. You can build up a customer list of future prospects. Also, if you sign service contracts with commercial places such as restaurants and food stores, you can work on a monthly fee basis. As you can see, it doesn't take many accounts to start making big money.

Another great, new opportunity field is auto air conditioning. Almost 500,000 such units will be installed in autos this year! You could open a shop and do this type of installation for auto dealers and private car owners in your community. It's being done right now. Shops needed everywhere!

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Although Refrigeration Mechanics is one of the major skilled crafts, it is among the easiest to master. Operating principles are simple, free of difficult theory, and understandable by persons with limited educations. Too, there are fewer parts to work with. It's just your ticket if you are in a hurry—if you need a new and better job (that pays more money) in the shortest possible time.

No need to make up your mind just now. First get the facts. Study them—and then decide if you want to cash in. Just fill out and mail coupon below. I have a new booklet which tells all, and I'll mail it as soon as I hear from you. It's free.—R. C. Anderson, CTI, 1400 Greenleaf Avenue, Chicago 26, Ill.

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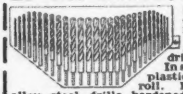

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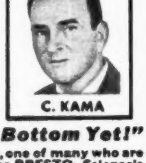

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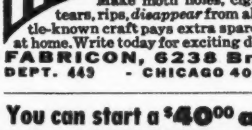

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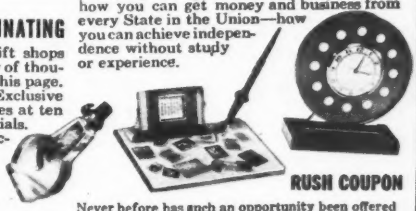

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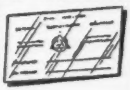

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• *Old-Timer*

Regarding those electric socks in the April MI—back in 1902 I made electric blankets, stockings, shoes. I also have a bathrobe wired and it was made in 1901. A man on Gary Moore's TV show I've Got A Secret said he made the first electric blanket in 1928 so I wrote to Gary Moore and told him if he wanted to see electric blankets made in 1901 to call on me anytime. I made electric wired stockings under my doctor's orders for old people with cold feet. I am 87 years young.

C. E. Densmore
Ulster Park, N. Y.

Old people with cold feet should be a real market; our Aunt Ida says all eligible men over 70 have them.

• *Chess Challengers*

Anyone interested in playing chess by mail, send first moves to Warren Fletcher, III, RFD 1, Franklin, N.H., or to Matty Wright, 502 Grant Avenue, Pittsburgh 9, Pa.

• *Courting Specs*

An article called Photo Caricatures (July MI) showed how to turn pretty girls into gargoyles through the use of glass with a pattern in it. Who needs that kind of glass? The average light of somebody's life needs the kind that will make her look better not worse. Maybe lenses could be ground to each girl's prescription. She could lend them to her suitors, who would then see her as the fulfillment of all their dreams.

Charlie Gibson
Buffalo, N. Y.

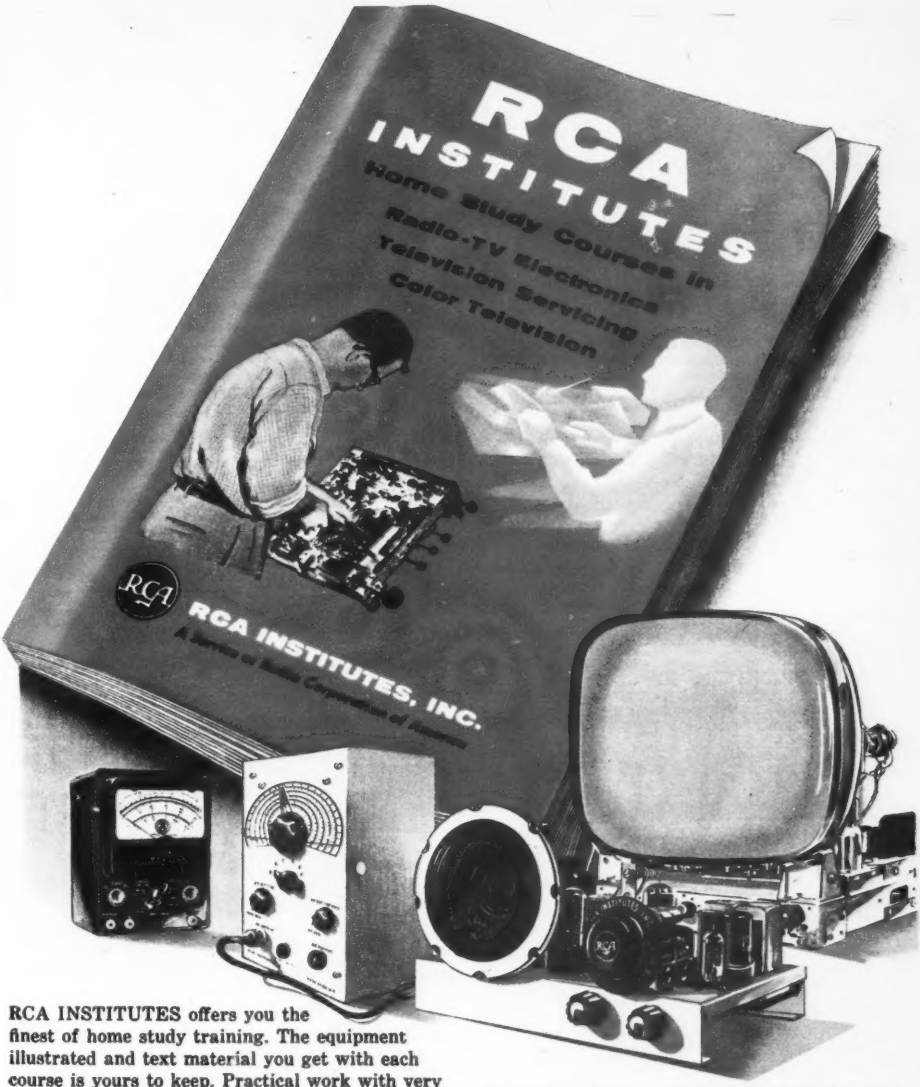
• *How To Price A What's-It*

In an old MI I noticed a picture of a fan that was operated by a coal oil lamp. I have located a similar fan. There is a metal tag on it with the words The Lake Breeze Motor Company, Chicago, Ill. I would like to know if this fan is worth anything and where I can find a buyer for it.

Charles W. Chapman
Goble, Ore.

The nearest antique dealer will buy it or refer you to another dealer who will. If you can stand to keep it awhile you may get better offers, however. Advertise by lending it to an appliance dealer to use as a gag display for his modern coolers. Keep an eye peeled for traveling Texans, who will buy darn near anything and pay a good price. Be seen enjoying it on your front porch.

[*Continued on page* 31]



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Invention Clinic

Joseph H. Kraus

In this column each month Mr. Kraus will answer as many letters as space permits on those subjects he feels to be of widest general interest. Time does not allow him to reply to any letters except those printed here. Address your questions to the Invention Clinic, *Mechanix Illustrated*, 67 West 44 St., New York 36, N. Y.

Book Rack

Anthony R. Perini of New Bedford, Mass., has designed a book rack which stands on the floor, may be hung from the wall or used as a carrier. What do we think about it?

Similar designs have been proposed before, so much will depend on whether or not you can patent yours. Your rack can be sold at a nominal cost, packaging it will be easy, it needs little storage space and assembly is simple. It should sell if it is marketed properly and made attractively.

Hardware For Sliding Doors

David L. McCall of Palmetto, Fla., sends photographs and diagrams of hardware for doors which are flush when closed, yet slide one behind the other. Should he spend more time and money on this project?

If the parts function as you state you should try to market the materials yourself or get some organization to do so. But will your system work on any but small sliding doors? I find it hard to believe that the hangers will work on warped doors and I am pretty sure you'll find many places where an upper hanger will be needed. I am of the opinion that the shoes, which are meant to *prevent* marring, will do just that. Rollers might do less damage. Also you might try to get around the need for a 45° bevel. I recommend that you experiment with large doors, then have a search made. If the report is favorable you should continue your efforts.

INVENTOR'S TIP OF THE MONTH

A good practical instrument or system is needed to measure the stresses, strains and heat limits of plastic articles. Why? A non-breakable cover on a slide projector made by a famous company broke the third time it was used. Phonograph records from quality manufacturers warp out of shape even when kept in albums. Plastic articles may be dropped a hundred times, then snap for no apparent reason and with much less applied stress than when under test. Manufacturers need to know why these things happen.

Boat Hull

Allan R. Mann, Jr., of Portland, Ore., has designed a boat hull which forces air between hull and water to help plane the craft. A small model works well. Is this worth pursuing?

Not only have similar designs been patented but patents also have been granted on designs which include systems for blowers that force air between the hull and water. Blower devices do not pick up spray or waves and are claimed to increase speed.

Cigarette Maker

W. de Bruyne of Kitimat, B. C., Canada, says he has gone through four years of hardship with his roll-your-own machine. How can he get the machine marketed?

If cigarette prices keep going up there is a good chance that some of the rolling devices will appear in quantity again. Unfortunately, few of these depression babies made satisfactory cigarettes. Even tobacco taken from tailor-mades and rolled again did not make a good cigarette. If your device will do a better job, you should be able to sell it. As

[*Continued on page* 24]

INVENTORS

If you believe that you have an invention, you should find out how to protect it. The first step is to have a search made of the prior pertinent U. S. patents. If a report on this search indicates that the invention appears patentable you can apply for a patent, and the specifications and claims should be prepared.

The firm of McMorrow, Berman & Davidson, with offices in Washington, D. C., is qualified to take the necessary steps for you. We can make a preliminary search on your invention, advise you whether we think it can be patented, and prepare your application for patent.

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Send for a copy of our Patent Booklet entitled "How To Protect Your Invention," containing information about patent protection and patent procedure. Along with this we will also send you an "Invention Record" form, for your use in writing down and sketching details of your invention. We will mail them promptly. No obligation. They are yours for the asking.

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Inventors

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Make a disclosure of your invention; sign, date and have this document witnessed by two or more people who understand your invention; authorize your registered patent attorney or agent to conduct a preliminary search among previously granted U. S. patents for similar types of invention; secure a report on the probable patentability of your invention and a recommendation of the further course to take.

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[*Continued from page* 22]

you already have the casting dies I recommend that you introduce the article on the market through jobbers or by direct advertising.

Garbage Compressor

Charles G. Trotter of Birmingham, Ala., sends a copy of his patent drawings for a device to be attached to the garbage can lid for the purpose of compressing garbage so that the average can will hold three times as much. Will we comment?

If you pack garbage into a can the garbage man will bang it against the truck to empty it. One medium dent in the can puts your device out of operation. This doesn't look like a winner.

Snow Removing Attachment

R. D. Stoddard of Burlington, Iowa, sends patent drawings and details of a device to be attached to gas-powered lawn mowers to convert them into snow removers. What terms should he demand regarding cash and royalty sales?

A gas-powered snow remover of the home use type was found to be useful once in five years along the east coast, where snow tends to be wet. Nevertheless, a good attachment should sell well at the $10 which you suggest. Any arrangement with a manufacturer should include reference to a cash down payment and a minimum annual guarantee either directly or against royalties of five per cent to seven per cent on the wholesale billing. Be sure to have your own attorney approve the terms and conditions of the contract, and make sure you are dealing with a reputable manufacturer.

Automatic Safety Switch

Alex Meyer of Fort Morgan, Col., says he has patented a switch to "automatically restore illumination of the headlights of a motor

[*Continued on page* 31]

INVENTORS

I shall be pleased to furnish you, upon request, with information relative to patent procedure—without any obligation on your part.

PATRICK D. BEAVERS
Registered Patent Attorney
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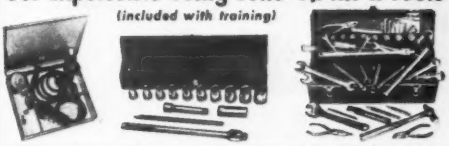

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Invention Clinic

[*Continued from page* 24]

vehicle in case of a short circuit or an electric overload occurring in the lighting system." Have we any comment?

Your idea is just about as safe as putting a penny under the fuse of a house electric circuit. In your design you are assuming that a short cannot occur in both circuits leading to the headlights. It can.

Mixing Water Faucet

R. Wentling of Watsonville, Calif., has designed and built a faucet which will mix hot and cold water as desired by the manipulation of only one handle. What are its chances?

As you have furnished no diagrams I can't comment on your design. However, several manufacturers make such faucets. Your chances depend on how good your design is.

Child's Walker

Wilbert P. Kostinius of Aurora, Minn., sends a diagram and description of a child's walker. Should he try for a patent?

It is not likely that any manufacturer would purchase your patent for this article. There are many like it. However, if you feel you can manufacture the walkers and sell them, as your letter seems to imply, it might be a good idea to have a patent search made. •

Dear Editor

[*Continued from page* 18]

• *Rocketmen!*

We of the Reaction Research Society, Inc. wish to thank you for the article in the April issue of MI. Also we would like to request that you refer any one who is interested in our society to P.O. Box 1101, Glendale 5, Calif. as our present secretary-treasurer, Calvin Van Wagner, will be pleased to answer any questions.

B. J. Humphreys, Jr.
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• *September Puzzle*

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[*Continued on page* 33]

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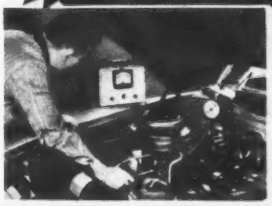

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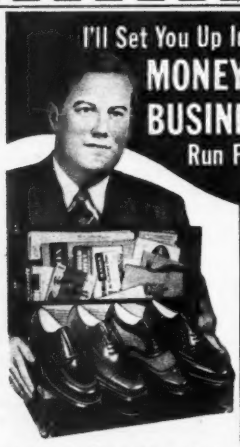

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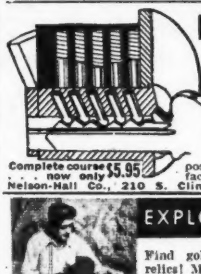

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Dear Editor

[*Continued from page* 31]

cows and five brown cows give in four days. Which kind of cow is the better milker, black or brown? (From 101 Puzzles In Thought And Logic by C. R. Wylie, Jr., $1.00, Dover Publications, N. Y.)

• *July Mystery Solved*

All droons are the same size and shape. All green slackens are the same size and shape. Twenty droons just fill up a muldruff. All wallaxes contain green slackens. A green slacken is 10 per cent bigger than a droon and a wallax is smaller than a muldruff. If all muldruffs and all wallaxes are predominantly red throughout, what is the largest possible number of green slackens in a wallax? (From Gerald L. Kaufman's Modern Puzzles, Dover Publications, Inc., New York, 1954).

Answer: eight. •

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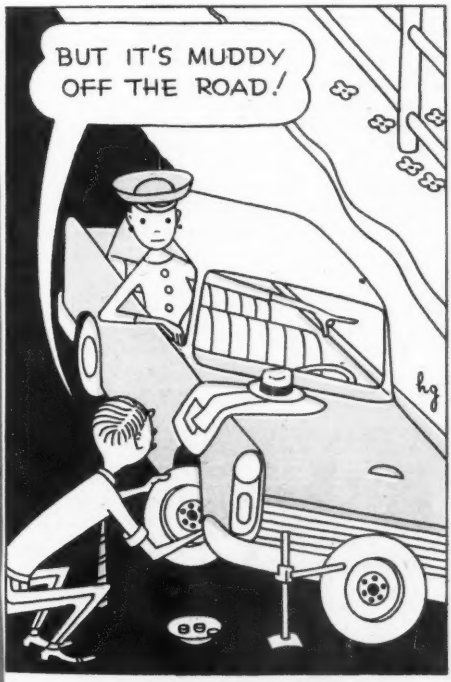

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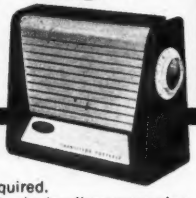

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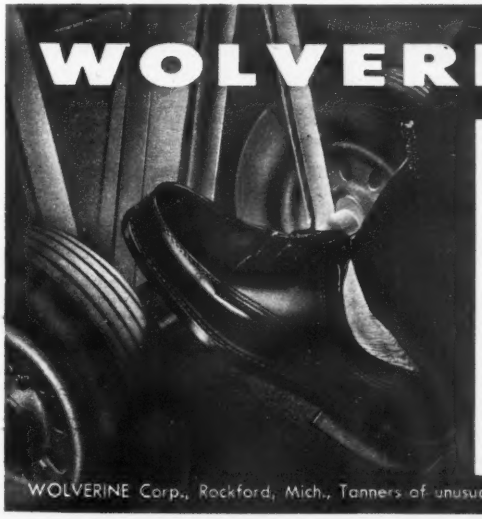

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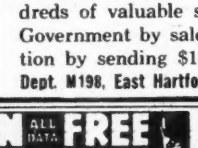

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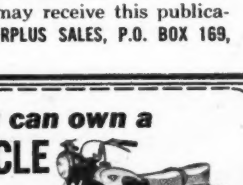

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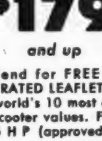

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Mail for McCahill

Uncle Tom is sorry he can't answer all his mail personally. In this column he'll answer the most interesting letters. Write to him at MECHANIX ILLUSTRATED, 67 West 44th St., New York 36, N.Y.

● *I took delivery of my new car recently and what a mess it was! As the dealer is an old personal friend of mine, he claimed that his service manager was giving my car his "personal attention." Because of this the delivery of the car was held up for several days. When I finally got the car, the power steering failed within 25 miles, the air suspension leaked and the automatic aerial didn't automat; two of the electric windows squeaked and one wouldn't work without a hand assist. What I want to know is this—what would I have gotten if the service manager hadn't given this car his "personal attention?"*

Name withheld
Fairfield, Conn.

Possibly a good automobile. However, let me point out that I know from long experience the "personal attention" pitch is strictly the kiss of death. The average service manager today is simply a salesman and order jockey. Most of them got their jobs because they could write fairly legibly and shave occasionally. What goes on under the hood or under the body is, in many cases, a complete mystery to them. Years ago, all high-class service shops of any size had a man who was known as a "trouble shooter." This guy was actually a pretty sharp mechanic with a flair for diagnosing all sorts of troubles from body rattles to engine thumps. The most valuable man in any shop used to be this diagnostician who would analyze the work needed, write up the order and shove the car in the correct slot. There may still be a few of these boys left but the typical service manager of today has replaced them for the most part—and he rarely knows more than how to un-jam the shop Coke machine.

● *Have often wondered (until reading the article about your "Fabulous Cruiser") what you do besides test cars. On page 172, April issue, it says that you go on shore "peddling trips." What d'ya peddle, hair restorer?*

Bill Davidson
Kansas City, Mo.

I tried that but somehow I couldn't gain the confidence of the customers.

● *This is my 33rd letter to you. How about answering one of them?*

Sam Brockman
Sacramento, Calif.

Just waiting to see if you're sincere.

● *Every time I go around a corner my body leans badly. How can I stop this?*

J.K.H.
Mamaroneck, N. Y.

Lay off the booze.

● *I've just read your test on the '58 Caddy and would like to know if the figure you gave of 4800 foot-pounds of torque is correct. If it is, how is this much torque obtained?*

Burton Schubert
Spearman, Texas

Just an over-enthusiastic editor—a Caddy far, no doubt. It should be 405 ft-lbs.

● *My father owns a 1955 sedan. In the almost three years he's had it, it's been tuned, tuned and tuned, all with the same result—short point and plug life (2,000 miles), poor gas mileage (10 mpg), rough idle, rough-shifting transmission and miscellaneous other complaints. The car had been serviced by three authorized dealers and sundry service stations—all with poor results. Since we take pride in a well-kept, good-running car, the above situation was a constant source of worry. Over lunch one day we were trying to figure out how to find a good mechanic who knew what it was all about, when you came to my mind. That night I went through all the Mail For McCahill columns and found you mentioned Bill Frick of Rockville Center, Long Island, in several of them. I called him and made an appointment with him to look over the car. To make a long story short, he took the car and went over it like it was a*

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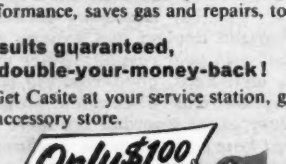

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competition rig. All the things that hadn't been done by the other dealers and so-called mechanics were done (and it would take two pages to list them!). The cost was $82.82 for parts and labor. At any rate, we are now getting 15 mpg and the car drives like new. My only complaint is that I didn't think of good old Uncle Tom sooner.

Anthony W. Manfredi
Oakdale, L. I., N. Y.

In many parts of the country there are other Bill Fricks, master mechanics who run their own shops and who aren't associated with any dealership. Anyone with a permanent address would be wise to find out if he has a Bill Frick in his vicinity, just in case the local car service proves lousy. After the guarantee has expired, don't be a sucker: if you're not satisfied with your dealer's service, take your rig to a good man who'll have a personal stake in making you happy.

● *Something has been bothering me—just who in the hell is that corpse who appears in the trunks of all the cars you test, name of Jim McMichael? All the trunks of the new cars I've seen are empty. Are you just lucky or what?*

John Moody
Chico, Calif.

We can arrange to have a similar corpse placed in your trunk. Kindly send for rate sheet. When ordering, please include size and specify delivery date and shipping address.

● *My daughter (age 18) is not a daddy-taught driver. Several years before her license date I exposed her to both your MI mail and your other articles. In turn, she included a group of her young friends. It's a pleasure to report that most of this young group drive cars in a manner that we can both be proud of.*

Harry F. Carlson
Belmont, Mass.

Harry, the only answer I have for your letter is: Thanks.

● *I bought a set of snow tires this winter for my '50 Chevy. I planned to leave them on all year but my neighbor tells me that gravel roads will cut them to pieces in no time. Is it wise to leave snow tires on all year?*

Everett Leppert
Saginaw, Mich

When snow-type tires were originally introduced it was felt that the harder vibrations created by them on hardtop roads would shorten the life of the rear-axle assemblies

[*Continued on page* 50]

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[*Continued from page* 48]

considerably. I have no statistics on hand to prove to what degree this might be true. But I do know that all of the snow tire's excess rubber could cause a lot of heat-dissipating problems at July turnpike speeds. Since their only real function is in the wintertime for combating snow and mud, I wouldn't attempt to use them throughout the summer, unless your driving is confined to short neighborhood hops. Besides, if you do more driving than this, the chances are that the tire's snow-fighting properties will be gone by the time another winter rolls around. Let's face it—no tire company I know of ever claimed these specialties were touring tires.

● *If Detroit thinks that four headlights are better than two, then I suppose they could argue that eight would be better than four, and 16 twice as good as eight. I'm looking forward to an entirely new front-end design by 1960—nothing but headlights, right across. Do you think this is a possibility?*

Ed O'Connor
San Diego, Calif.

If you'd been around the squirrel cages of Detroit as long as I have you'd know that anything is a possibility—and, what's worse, a probability.

● *The other night I took my just-delivered new sedan, packed the kids aboard and headed for our favorite drive-in movie. Due to the fact that the windshield has a heavy blue band at the top and is tinted gradually all the way down, it was impossible to enjoy the picture on the screen or even see it, at times. The actors all looked diseased and even the hero had a Dracula complexion. The only cure for this was to squat down as low as we could and peep under this annoying dark blue band. Before we got home, my wife and the kids hated the new car—and I'm not so sure now I like it, either. Have you any suggestions, Uncle Tom?*

Peter Radacher
Burbank, Calif.

You could buy an old periscope and install it through the roof. Or you might try parking backwards and watching the picture in the sideview mirrors. This will present no problem providing you can read backwards, as so many of our readers can.—*Tom McCahill*

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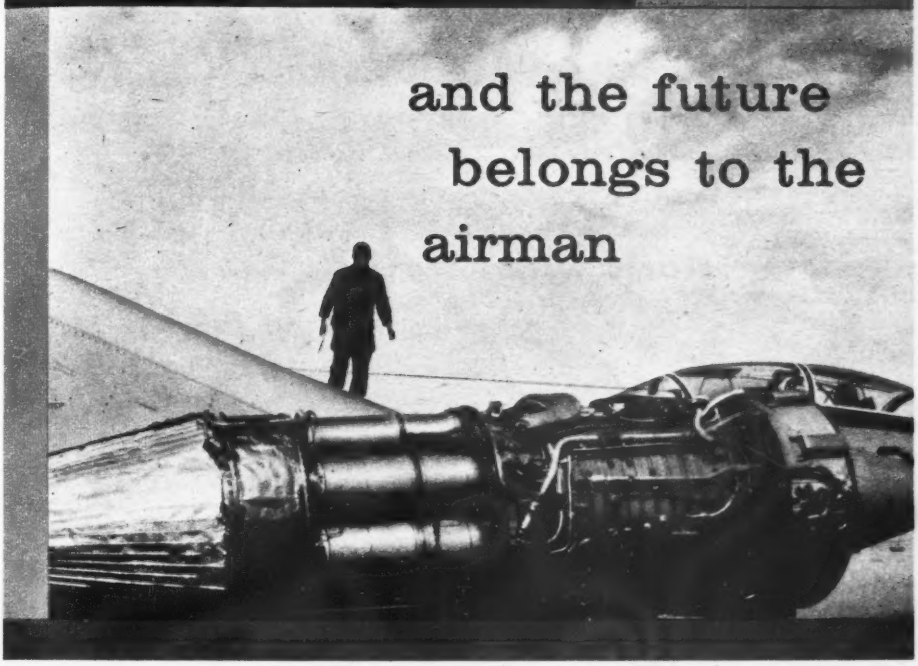

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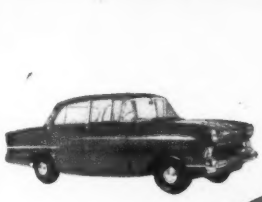


AMERICA'S SMALL CARS

By Robert G. Beason

WHEN is Detroit going to bring out a small car?

We have a very brief answer to the question that the Motor City moguls are ducking so busily. Detroit *is* producing small cars. Among the makers of this year's 300,000 imports you will find the names of three big U. S. companies: Ford, General Motors and American Motors. The small cars they turn out bear such names as Vauxhall, Anglia and Metropolitan. Although manufactured

Detroit already is producing economy cars, with 18 models designed in the United States but manufactured abroad.

abroad, they are produced by American firms with American capital. If you wonder what Detroit's small car might look like, take a gander. These immigrants were designed in Detroit.

Altogether, the three camps produce 18 models of cars and station wagons under 11 brand names. They range from the 142-in. Escort to the 180½-in. Zodiac.

The economy they offer is real, especially among the smaller bugs. They have initial New York port of entry prices as low as $1,539, low license fees (where weight is the index) and a modest thirst that will run them as far as 40 miles per gallon. The average hardtop in the clan is tagged at $1,890, the average gas consumption is 32 mpg.

Port of entry price includes ocean freight and federal tax but not license fee, state taxes or dealer charges. This basic price increases as you go west. If you live in the middle of the country (Detroit, Chicago, St. Louis, etc.) you should add $50 to $70 to the New York POE price. On the West Coast the figure is $160 to $190.

The "small" part of the small-economy-car tag also is real. Most models seat four comfortably—but not more.

Suspension is stiffer than on standard-size cars, producing a bumpier ride but also much firmer handling and roadability. The four-cylinder engine is almost universal, with horsepower

$1,812.50 **New York port of entry price of Vauxhall with heater, defroster. 35 miles per gallon at 30 mph. 55 hp. Top speed 85 mph. Wheelbase 98 in. Length overall 166.5 in. Width 62.16 in. Height 57.96 in. Weight 2,150 lbs. 4 cylinders. OHV. Price of the station wagon (right) is $2,194.45.**

METROPOLITAN (AMC)

$1,626.10 New York POE price of Metropolitan. 39.5 mpg at 30 mph. 55 hp. Top speed 75 mph. Wheelbase 85 in. Length overall 149.5 in. Width 61.5 in. Height 54.5 in. Weight 1,938 lbs. 4 cylinders. OHV. Price of convertible (left): $1,650.10. Built in Austin-AMC pact.

$1,812.50 New York POE price of Opel. 35 mpg at 30 mph. 56 hp. Top speed 78 mph. Wheelbase 100.04 in. Length overall 174 in. Width 63.6 in. Height 59 in. Weight 1,995 lbs. 4 cylinders. Valve-in-head engine. The price of the station wagon (right) is $2,194.45.

OPEL (GM)

American car builders no longer can ignore inroads made by foreign rigs, now selling at 300,000-a-year pace.

ratings generally from the 30's to the 50's. That means modest pickup and a top speed below 80. Parking becomes almost a pleasure because the smallest import is a whopping five and a quarter feet shorter than the Ford-Chevy-Plymouth range, while the biggest is about two feet shorter.

Ford has the widest spread in this Detroit-designed, foreign-built field with eight brand names and an even dozen models. GM now imports two brands with four models and AMC brings over the Metropolitan in two models.

The coals-to-Newcastle business was started by Ford in 1948 when they began importing the cars they produced

SQUIRE (Ford)

$1,629 New York POE price of the Escort (below). 35 mpg at 30 mph. 36 hp. Top speed 70 mph. Wheelbase 87 in. Length overall 142 in. Width 61 in. Height 63 in. Weight 1,870 lbs. 4 cylinders. Side valves (L head). The Squire station wagon (above) is a deluxe model of the Escort, is priced at $1,739.

PREFECT (Ford)

$1,639 New York POE price of the Prefect (above). 35 mpg at 30 mph. 36 hp. Top speed 71 mph. Wheelbase 87 in. Length overall 151 in. Width 60.75 in. Height 58.75 in. Weight 1,765 lbs. 4 cylinders. Side valves (L head). Available in 4-door style only. Styling is similar to that of the 2-door Anglia (opposite page).

ESCORT (Ford)

ANGLIA (Ford)

$1,539 New York POE price of Anglia. 35 mpg at 30 mph. 36 hp. Top speed 72 mph. Wheelbase 87 in. Length overall 149.75 in. Width 60.75 in. Height 58.75 in. Weight 1,716 lbs. 4 cylinders. Side valves (L head). Available in 2-door style only.

$2,012 New York POE price of Consul. 27 mpg at 30 mph. 59 hp. Top speed 80 mph. Wheelbase 105 in. Length overall 172 in. Width 69 in. Height 62 in. Weight 2,504 lbs. 4 cylinders. OHV. 4-door sedan. 2-door convertible (left) has top with de Ville and down positions, carries price tag of $2,351.

CONSUL (Ford)

Best guess is that a made-in-U.S.A. small car is in the works for 1960 . . . and that Detroit will be sorry.

at Dagenham, just outside London. These pioneering English Fords helped make imported economy cars popular over here.

After several years in which Ford International had the field pretty much to itself, AMC started bringing in the Metropolitan, built in England in a deal with Austin. Last year GM began importing their English-built Vauxhall and the Opel, manufactured in West Germany. Newest of the group is Ford's built-in-Germany Taunus, which the company started importing last May.

Although Detroit does offer a relatively big selection of small imported economy cars, the question about a made-in-U.S.A. model remains unanswered so far as the public is concerned.

Most observers agree that if a Detroit-built economy car is to come out, it will be a 1960 model introduced late next year. To put a car on the market by that time, the yes-or-no decision had to be made during the past four or five months. Tool-and-die work requires that much lead time.

U. S. manufacturers no longer can ignore the inroads made by the small foreign jobs, especially in auto-depressed 1958. Last year Americans bought 206,000 [*Continued on page* 155]

$2,365 **New York POE price of Zodiac. 25 mpg at 30 mph. 86 hp. Top speed 90 mph. Wheelbase 107 in. Length overall 180.5 in. Width 68.8 in. Height 62 in. Weight 2,738 lbs. 6 cylinders. OHV. 4-door sedan. 2-door convertible with de Ville and down positions. Price of the convertible (left): $2,843.**

ZODIAC (Ford)

ZEPHYR (Ford)

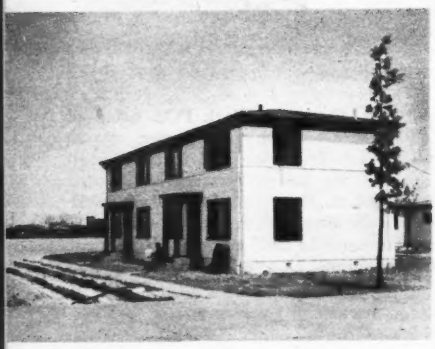
$2,193 New York POE price of Zephyr. 25 mpg at 30 mph. 86 hp. Top speed 90 mph. Wheelbase 107 in. Length overall 178.5 in. Width 68.8 in. Height 62 in. Weight 2,691 lbs. 6 cylinders. OHV. 4-door sedan. 2-door convertible (left) with de Ville and down positions. Convertible price: $2,552.

TAUNUS (Ford)

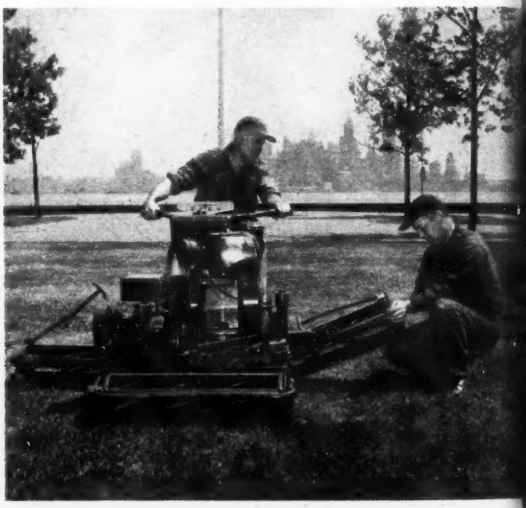
$2,016.50 New York POE price of Taunus. 35 mpg at 30 mph. 67 hp. Top speed 80 mph. Wheelbase 102.5 in. Length overall 172.2 in. Width 65.7 in. Height 57.7 in. Weight 2,205 lbs. 4 cylinders. OHV. Taunus comes in three standard or deluxe models: 2-door or 4-door sedan and station wagon (deluxe sedan shown). Price of station wagon (above, left): $2,225. (For more information on the Taunus see Tom McCahill's test report in this issue of MI.)

Miss Liberty's

LIKE other great ladies, the Statue of Liberty has her weaknesses and all of them are known to George McNamara of the National Park Service. Mac lives on Liberty Island in New York harbor. For 20 years he has been faithfully helping to hide her age (she's 72 this year). The 152-foot statue was a gift from the people of France. •



FRONT DOOR of America is outside front door of Mac's windswept island cottage.



POWER MOWER gets Mac's attention. Behind are famous towers of Manhattan.

12-STORY CLIMB from pedestal to head of colossal statue is an old story to Mac.

BIG BULB lights inside of head like an idea. The wavy lines are Liberty's hair.

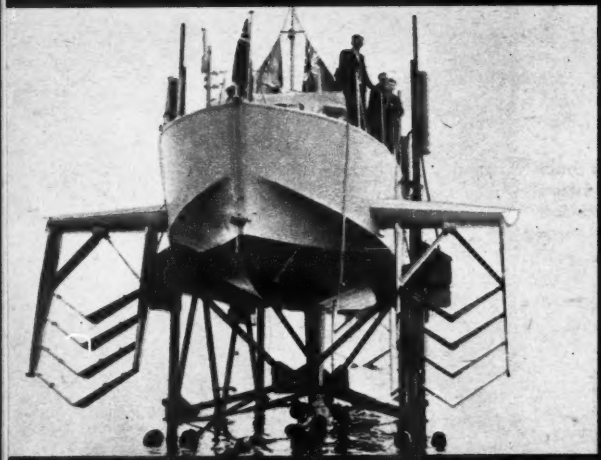
MR. FIXIT

RARE PHOTO shows Liberty's back with her personal attendant below the ramparts of the star-shaped fort.

UP THE ARM goes Mac with a box of big bulbs to light Liberty's famous torch. Arm is closed to the public.

CROWN JEWEL windows through which visitors view harbor are wind-buffeted, need frequent care.

BOAT ON STILTS



THE Canadian Navy's new hydrofoil coastal defense boat differs from other hydrofoil craft in the ladder-like arrangement of its V-shaped blades, which are of a type known as "surface piercing." The advantage of this style of hydrofoil is its greater stability. As the boat gains speed the ladders "climb" up out of the water, lifting the hull 42 inches above the surface—plenty of clearance for rough water operation. Although her performance is a classified subject, the boat's length is 59 feet and her weight is 17.5 tons. Called the Bras d'Or after the Canadian lake where Alexander Graham Bell first operated boats of this type between 1910 and 1919, this particular craft was built in North Wales for the Canadian government. Her after-foil serves as a rudder as well. •

BEAM ON WHEELS

THE 50-ton concrete beam shown below wending through Miami to a new cement plant 20 miles out in the Everglades is believed to have made the longest right turn in history at SW 27th Ave. and Eighth Street. One of 47, beam is 100 feet long. •

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MIMI

CELEBRATING the fifth anniversary of MI's popular Golden Hammer Award, MIMI poses with a six-ft. balsa and pine replica of the famed prize. Since 1953 almost 500 24-karat gold-plated Hammers have been awarded to craftsmen whose projects showed superior design and workmanship. You'll find the winners of this month's Golden Hammers in the Home-Crafts-Shop Section. •

GRASSHOPPER INFANTRY

ROCKET-POWERED belts would enable attacking infantry to jump 100-yard streams in giant bounds to wipe out the surprised enemy.

By Frank Tinsley

THE enemy rear guard has withdrawn across the little stream and awaits our advance. Lying in hastily-dug foxholes, they stolidly watch as U. S. infantrymen filter through a belt of distant trees toward the cleared stream bank. A few enemy mortar shells send geysers of earth skyward but beyond this, the delaying force holds its fire. Soon the well-dispersed GIs will have to leave their leafy cover and bunch up in the clearing to ford the stream. Then the enemy will open fire!

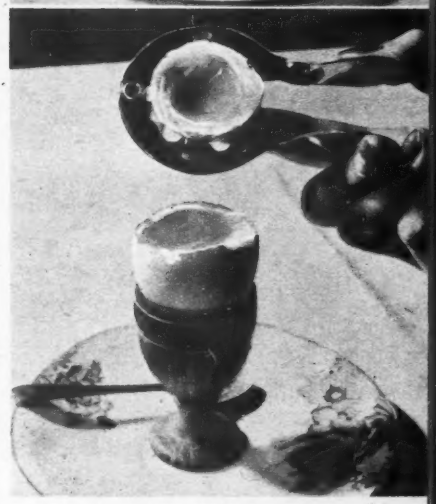
Suddenly a squad of Yanks bursts from the trees and zooms across the clearing in fantastic running leaps. Trailed by jetting plumes of smoke, they sail over [*Continued on page* 150]

It's New!

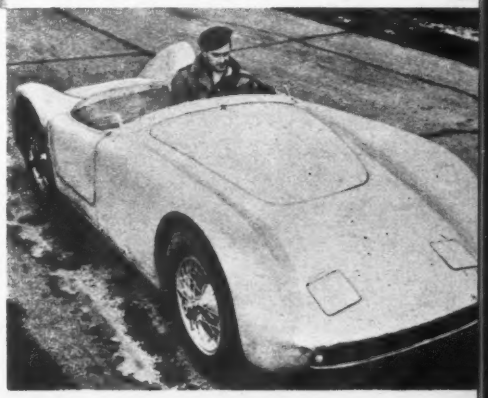
CANNED CLOCKS made by General-Gilbert Corp. reach the buyer in factory-checked condition, allowing maker to offer year's guarantee.

PIPE INSPECTORS of the Stuttgart, Germany, water supply system bobsled 90 miles from Lake Constance to the city through three-ft. pipe, riding low-slung coasting vehicle—and come out smiling.

COMBO sturdy step ladder and ironing board, perfect for ladies who keep their flatirons on the top shelf, was among exhibits at a recent Paris home show.



EGG TOPPER for English soft-boiled enthusiasts (they eat out of the shell) tops egg without damaging yoke.



CZECH RACER featuring glass body, 90-hp mill, top speed of 124 mph, total weight of 1200 lbs., is reported to be "very stable" by Red builders.

RADIATION detector that fits in a handbag buzzes a warning when the bearer has been exposed to a dangerous amount of radiation. A West German firm makes the dosimeter.

WILLYS TRUCK carries men or material. Seats fold into bed, engine is under the bed. The Army has ordered one for testing.

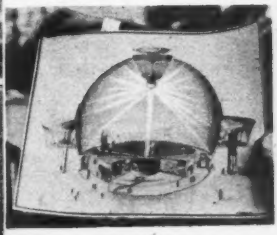
AIR SUPPLY trucks are now in use by New York's Fire Department to take fresh air into burning buildings filled with smoke, gas.

UNSINKABLE YACHT passes a parked car on a rural road in England. Two bicycle frames, some gas pipe and an old Spitfire steering box went into the novel sailcraft.

MOPED—that's a German motor-and-pedal-powered bike—to which a mower may be hitched is the very latest thing for riding around on your own turf.

HI-FI COMBO, trade name of this organ and record player in one, has electronic keyboard, four-speed player. Both units can be played at one time.

ROUND MOVIES, taken by shooting up at a reflecting ball, are the latest thing in German camera techniques. The black disc on the ball prevents camera taking its own picture. Movies must be projected in a round room, naturally.



MONEY MAKING IDEA

THEIR BUSINESS TAKES THE CAKE

BIG SELLING white fruit cake is held by John Rush, General Manager of Grace Rush, Inc.

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By Marianne Besser

JOHN RUSH got his start in business shelling nuts and sweeping floors at the age of 12. Today he is General Manager of Grace Rush, Inc., leading producers of fancy foods, a business which started in his mother's kitchen.

The company which now sells over 200,000 fruit cakes a year was born by chance with an order for a dozen cakes. That first order to the Rush home on Cincinnati's Erie Avenue in the fall of 1917 resulted from an incident in a famous New York restaurant. A friend of Grace's had refused to buy the restaurant's fruit cake, explaining: "You can't sell me because I've got one at home that would make yours look sad." (It had been baked by Grace.) When the restaurant manager asked for a sample of this wonderful cake, Grace obliged. The order for a dozen of them came back fast.

The restaurant wanted the 12 cakes in a hurry. Mrs. Rush had to buy all her ingredients at a neighborhood grocery. The cake then, as today, contained five kinds of nuts and nine varieties of fruit, and they all had to be prepared. Her kitchen oven could only bake six cakes at a time so she had to bake the batter in two batches. There were a couple of frantic days but Wilfred Rush—Grace's husband—and John and his older brother Warren helped out.

When the cakes arrived in New York, the restaurant wired for a name. Grace sent the name and a picture of her daughter, Martha-Ann, born a few months earlier. Most of the Rush products have since borne the Martha-Ann brand name.

That first year, Grace Rush, Inc., grossed $36 and cleared $18, a 50 per cent profit! Today the company grosses well over $500,000, "But we are lucky to net four to five per cent," says John Rush.

The early years were easy. There was plenty of hard work in filling orders but the cakes sold themselves. The first equipment bought was an electric mixer and a baker's oven. They were both purchased for [*Continued on page* 163]

RUM SQUIRT with syringe gives white cake character before being wrapped, packaged.

FRUIT for the cakes is ladled onto trays. Nine fruits, five kinds of nuts go into it.

CHRISTMAS gift package retails at $19.95. Basket stool is imported from Yugoslavia.

McCAHILL TESTS

THE FORD TAUNUS

By Tom McCahill

FROM the land of Leapfrogmilk (Liebfraumilch, if you're stuffy) come just about as many different brands of automobiles as emerge from Detroit each year. The latest offering to invade our shores from the land of pickles, sauerkraut and Marlene Dietrich, is Ford's Taunus.

The Taunus comes in several different shapes and sizes, including Standard and Deluxe, station wagons and sedans with sliding fabric roofs. The Taunus is Ford's $2,016.50 answer to GM's Opel and it is also Ford's goose-step offering to the American small-car-buying public. Named after a mountain range on the Rhine, the Taunus is one of the best-looking small imports to date. At a quick glance it looks something like a dehydrated Plymouth with a dash of Studebaker tossed into the pot. But the decorative garnishings, especially the

"An interesting and well constructed little character," says Tom of this 70-mph German-made rig which is Ford's $2,000-plus offering to the American small-car-buying public.

TEST CAR SPECS

MODEL TESTED: **Two-door Standard** with optional Saxomat clutch
ENGINE: **4** cyls; **103** cubic ins; **67** brake hp; **97.6** ft-lbs max torque; **7.1** to 1 compression ratio. Bore **3.31** ins; stroke **3.02** ins; Fuel required: **Regular.** Standard axle ratio: **3.9.** Wheelbase **102.5** ins; length **172.2** ins; height **57.7** ins; width **65.7** ins; front tread **50** ins; rear tread **50** ins. Weight **2,157** lbs. Gas tank capacity **11.9** gals. Turning circle diameter **37.7** ft. Tire size **5.90 X 13.**
PRICE (without optionals): $2,016.50.
PERFORMANCE: **0-30** mph, **5.7** secs; **0-50** mph, **11.2** secs; **0-60** mph, **17.4** secs. Top speed **80** mph. All times recorded on corrected speedometer.

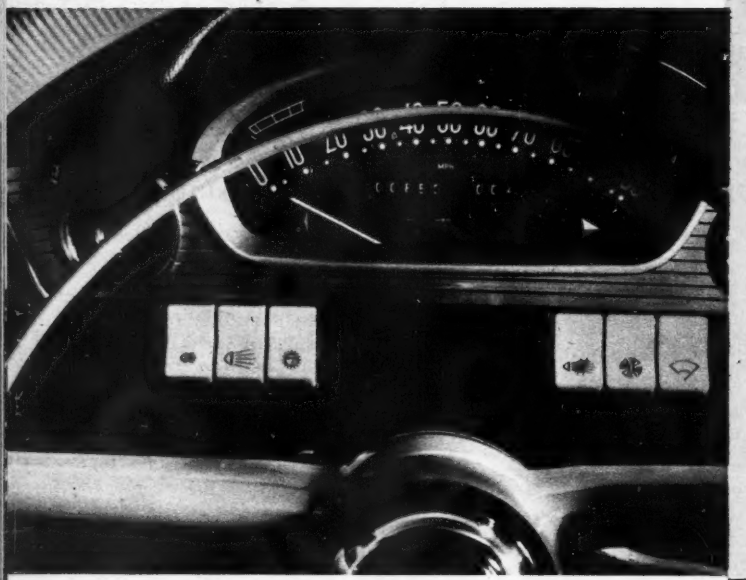
TAUNUS styling impressed Tom: "One of the best-looking small imports to date."

chrome treatment along the sides, are strictly Ford Dearborn Renaissance.

Our introduction to the Taunus was rather sporting, if not rude. A Standard model was driven out to my private proving grounds for our MI test. Happy Jim McMichael, the bearded trunk-tester, accepted delivery and offered to drive the deliverer to the railroad station so he could high-tail it back to the city. And therein lies a tale.

The Taunus we tested had what is known as a "fully automatic" Saxomat clutch. This statement may or may not be true, depending on how you view such things. The "automatic" part means that you don't have to shove down a clutch pedal to shift gears. This is done in the conventional manner with a standard-type, steering post gearshift. It's sort of like being half-safe, almost-loaded or almost-married. On the floor, next to the gas pedal, is a large pedal for braking purposes.

McMichael, being quite a swift box-boy, was running up through the gears on his way to the station, and in order to make an impressive Hollywood slam-



OFF-BEAT keyboard controls remind Tom of mah-jongg pieces. Left to right: Parking lights; headlights; instrument panel lights; accessory key to connect future fog or spotlights; heater fan control; windshield wipers.

shift between 2nd and 3rd, he whipped the hand control and at the same instant, unconsciously hit the brake pedal with his left foot (forgetting he didn't need clutch thrust). Now when Jim's size 12 clomps anything, it has enough force to pulverize a diamond nestled on a foam rubber mattress. The brakes on the Taunus were excellent. They grabbed like a tiger ripping the back of a suckling pig. There was a quick, instantaneous, convulsive movement of the car body and McMichael's passenger shot forward like a Charlotte Russe out of a French '75. Fortunately, his head was turned sideways and his shoulder hit the windshield, which all goes to prove how far we'll go to make our tests thorough.

The Taunus' pop-out windshield, we can now state, really works and is a real safety feature. After taking quick inventory of his passenger's health and finding him sound, though perhaps a bit chagrined, a detour was made to a body shop where the popped (but unbroken) windshield was sewed back into place.

In the days that followed, our test Taunus was used for everything around the place, including short trips to the store and long trips to the gin mill. Forewarned by McMichael's near catastrophe, I soon caught onto the shift and found it very pleasant but I couldn't quite get the meaning of the "automatic" because you do have to row this thing by hand-shifting.

There are many things I liked about this little car and quite a few things I didn't. For example, to open the doors from the inside, you are confronted with a

ENGINE ROOM with 4-cylinder, 67-hp mill gives Taunus 60-65 mph cruising speed. Zero to 60 in 17.4 seconds is highly commendable in its league, reports Tom.

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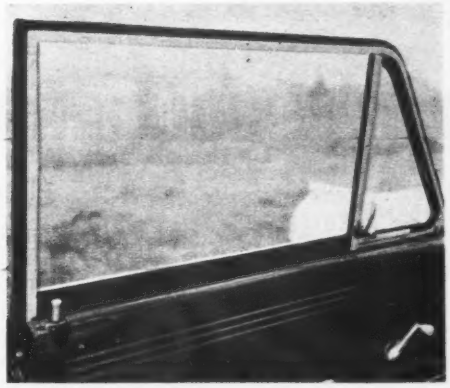
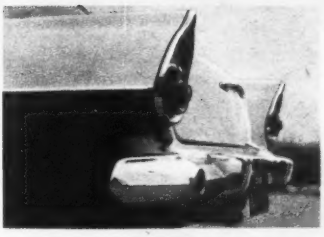
typical Kraut gadget—a device similar to grabbing the brass ring on a merry-go-round. Nestled ahead of the armrest is a mean little gizmo that must be milked with a good, firm jerk if you want the door to open. The ride is extremely comfortable and despite its highly-touted "overlong spring legs suspension" (long coil springs combined with telescopic shocks tied into a torsion bar) there is nothing Grand Prix about its cornering ability, to say the least. In fact, a number of American cars could drill its ears out on a hard turn.

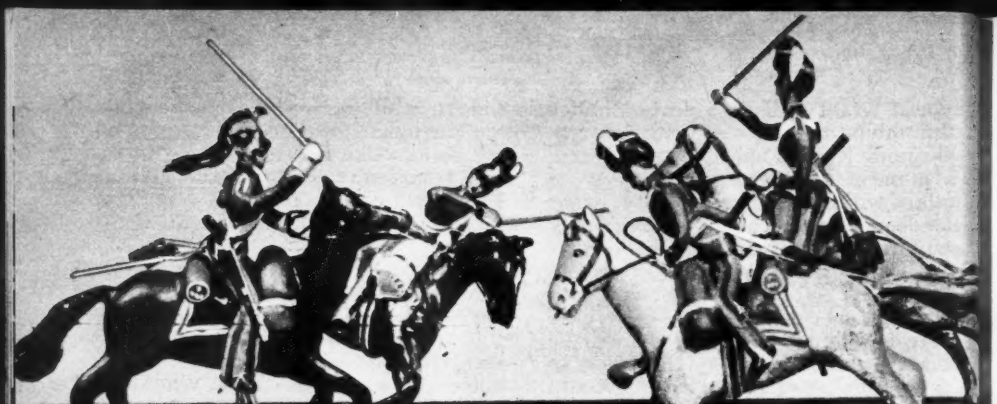
My biggest disappointment with this car (and one that will undoubtedly disturb the army of small car enthusiasts) is the Taunus' poor traction. Most small car owners get their kicks in king-sized bags when the snow and ice are on the ground. The typical small import can slide up a hill like a puff of smoke while the Michigan Monsters are churning on the bottom like silverfish trying to escape from a shiny bathtub. The Taunus, I fear, will not be one of those puffs of smoke due to too much weight in the snoot.

They way I discovered this was in driving across a slightly moist field as flat as a village soprano's high C. We got out to let one of the dogs run and then climbed aboard again to head for home as it was getting dark. What happened was unbelievable. On this flat field, with the grass just mildly damp, the wheels simply spun. "Must be in a slick spot," thought I (in the best Tom Swift tradition). So McMichael and I climbed out of the car and kicked it back a few feet and tried again. Now I've gotten out [*Continued on page* 158]



"DECORATIVE garnishings are strictly Ford Dearborn culture," says Tom. Flap seals window channel when window is down, above. Taunus gets McCahill cornering test, below.





NAPOLEONIC CUIRASSIERS, cast in various action poses, form a dramatic battle group.

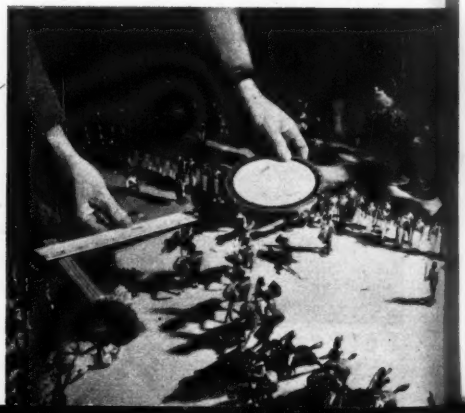
LITTLE SOLDIERS- BIG HOBBY

By Ed Morris

ALL miniature military figure collectors (the term "toy soldier" is like a hot iron to them) have heard about the three GI collectors in Germany during World War II. The story may or may not be true, but the gist of it is that the three men entered a museum and told the director they had been detailed to remove a collection of Napoleonic lead soldiers to a safe place. After carefully packing the large and valuable collection

MAN AND BOY can both enjoy this hobby.

RULES of battle are strictly adhered to.



in straw-filled boxes the three left and have not been seen since. Nor has the collection. The story illustrates a well-known point about lead soldier collectors. They will, by their own admission, do almost anything to enlarge or improve their collections, from hocking their dentures to shoplifting.

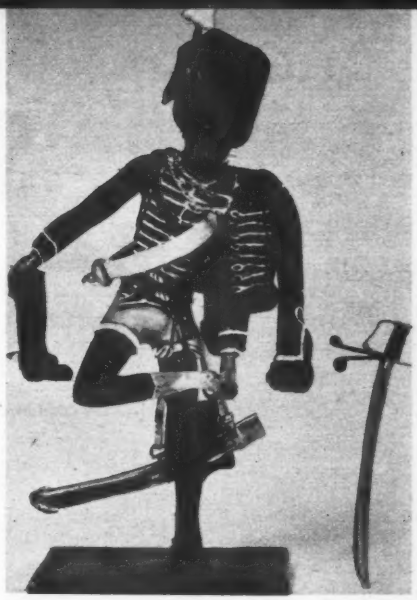
There are 12,000 such collectors in the U. S. In Europe the hobby is much more popular, having a longer history of patronage by people like Louis XIV, Napoleon, H. G. Wells and Sir Winston Churchill. The modern collector may go in for large numbers of soldiers of a period, for complete units from different periods, or for a very few exquisitely made and religiously accurate figures. Some collectors buy finished figures, some buy them unpainted and get their kicks finishing them and some make their own models, molds and casts.

Authenticity is the mania that drives these hobbyists into libraries, bookshops and museums, trying to get every button and strap just right. Authenticity is what figures are judged on at competitions sponsored by military figure collectors' societies. Collectors who send their figures to such competitions can send individual figures or dioramas—groups of figures that tell a story.

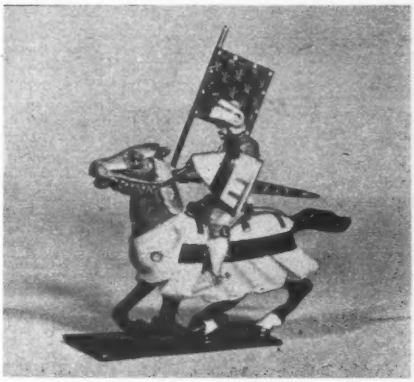
Besides those who delight in making and collecting soldiers, there are the war games fiends. Their games with lead soldiers are based on rules laid down by H. G. Wells in his book Little Wars.

While collectors will sometimes learn a new language just to accomplish research, they generally agree that beginners should start with American Revolution or Civil War figures. There are many illustrations of this period and research is relatively inexpensive and easy to accomplish. Larger libraries usually have a sizable collection depicting these periods of warfare and most of them will allow sketches or even photos to be made.

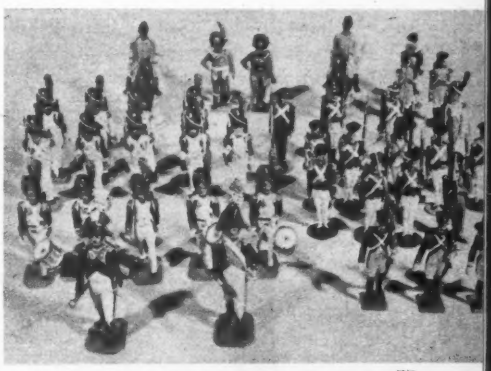
Other research material sources are museum displays and libraries, historical societies, bookshops, especially those carrying older volumes and pamphlets published [*Continued on page* 161]



REALISTIC cavalryman has hole in sock.



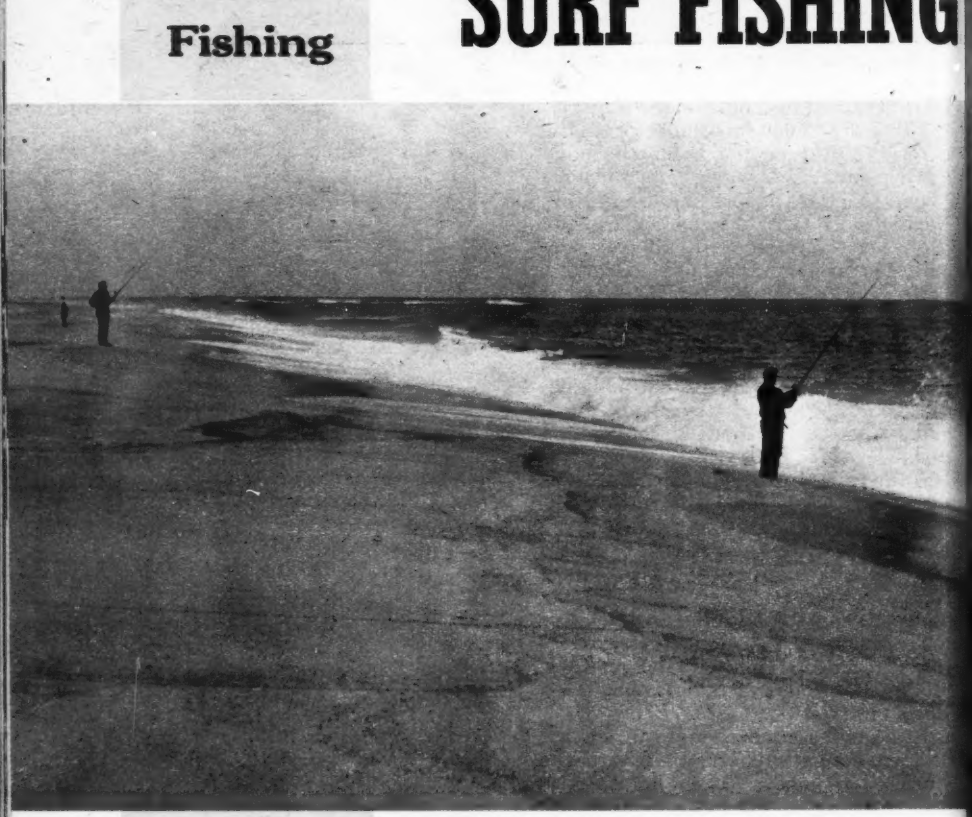
KNIGHT AT ARMS in a tabletop tournament.



FAVORITES—gorgeous Napoleonic troops.

Hunting and Fishing

SURF FISHING



By Wynn Davis

BEACH anglers from Cape Cod down the long Atlantic Coast to Miami agree on one thing, if on nothing else. They say that the striped bass is the hardest fighting, roughest and toughest fish in the surf. Every fisherman able to cast a lure or toss a bait into the surf loves and respects this heavyweight battler.

It's easy enough at times to beach a couple of five-pound rookie stripers, but trying to beach a battle-wise old veteran of 20 pounds or more is something else again. The first big striper that I hooked struck so hard that it smashed my rod to smithereens before I knew what had hit me. Then it went into a routine of shenanigans that would have shamed a bucking bronco. And just fooling the big ones into striking your lures is a real challenge.

The first rule of successful surf fishing is to fish

FOR STRIPERS

HALF A HUNDRED pounds of fighting striper taken from the Cape Cod surf. Left: Surfcasters at the ocean's edge.

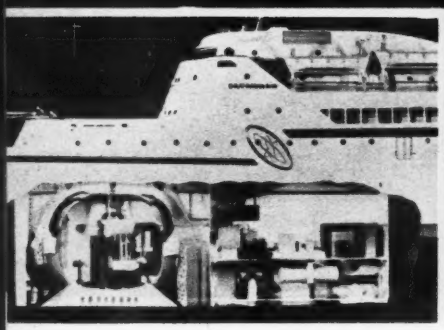
where stripers are feeding and know what the fish are feeding on. Then either use live bait or a lure that is a dead ringer for the bait fish in the surf. How do you know where stripers are feasting? Easy. Cruise the beach and look for gulls wheeling and screaming in the air over a small area of ocean just beyond the breakers. When you see them doing this and diving into the water, you can bet a case of beer that the birds are crashing somebody's dinner party—and it might be stripers. In the absence of gulls, look for a huge dark area of ocean with ripples on it and tiny silver flashes below. That's going to be bait fish. If no gulls or other signs of bait fish are around, look for big fish rolling in the surf or breaking water just outside the breakers. Chances are there'll be stripers working on sand eels.

The most abundant bait fish along the Atlantic Coast are the herrings: sea herring, glut herring, alewives, hickory shad and moss bunker or menhaden. Herring in huge schools often travel right on the surface. Recognize them by their deep, thin bodies, large silver scales and deeply forked tails.

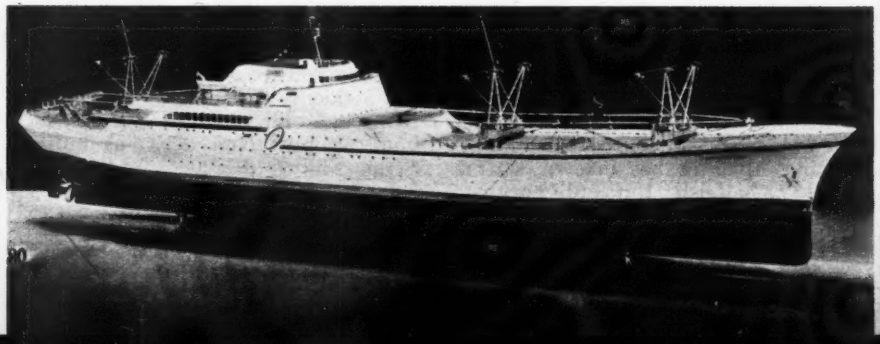
When you see a large school of small fish suddenly burst into the air and go flying in all directions over the surface, you can put them down as mullets. Stripers like mullet too—but those little fish are usually too fast for them.

Another [*Continued on page* 153]

ATOM-POWERED MERCHANT SHIP



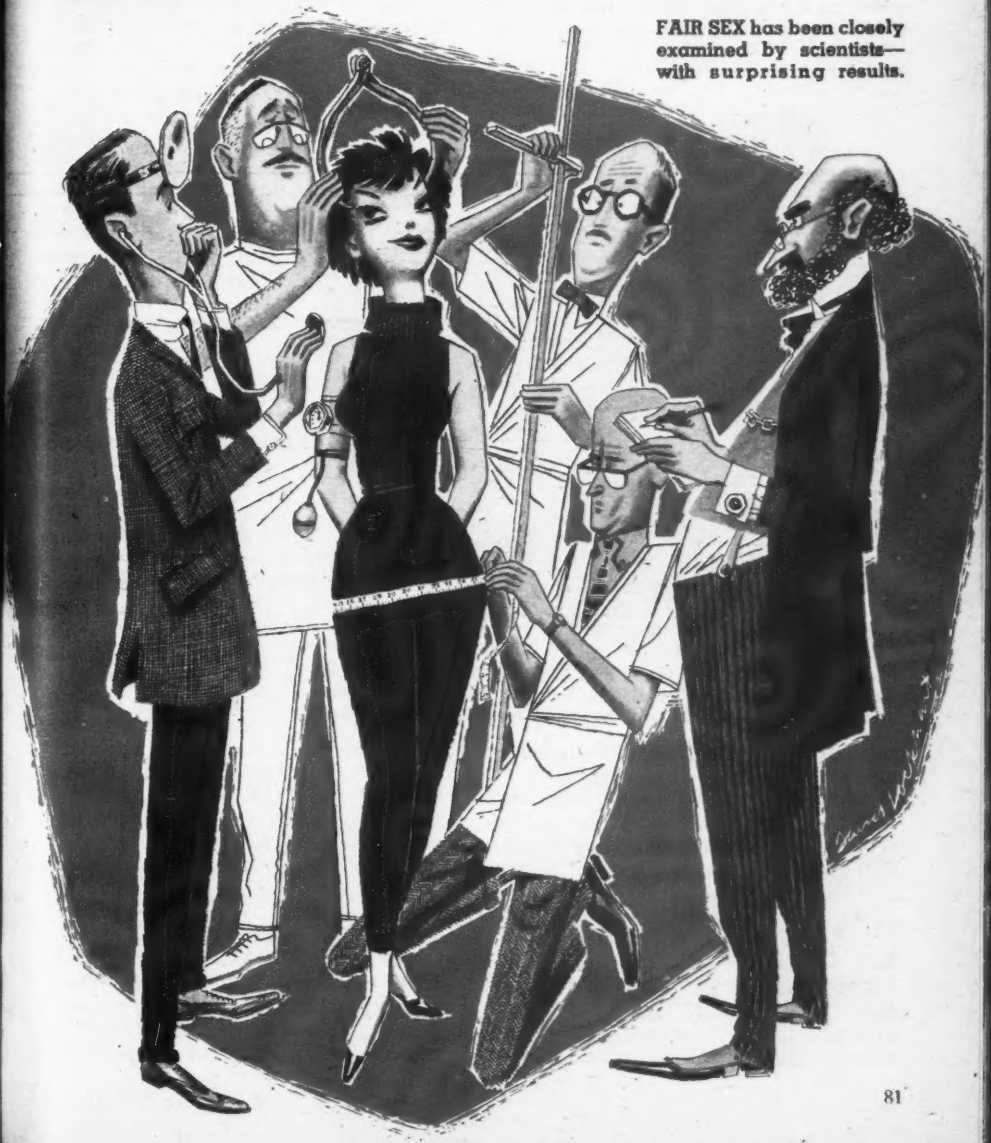
ATOMS FOR PEACE is not just a phrase to Uncle Sam. For sometime in 1959 the world's first atomic-powered merchant ship, the *NS Savannah* (NS for Nuclear Ship) will be launched and is expected to be in operation by 1960. Cutaway of model (above) shows the shielded pressurized water reactor power plant. Conventional steam turbine diesels are at right. The 10,000-ton ship will be 587 feet long, travel at 20 knots and will cost approximately $21,000,000. •



10 THINGS YOU NEVER KNEW ABOUT WOMEN

By Lester David

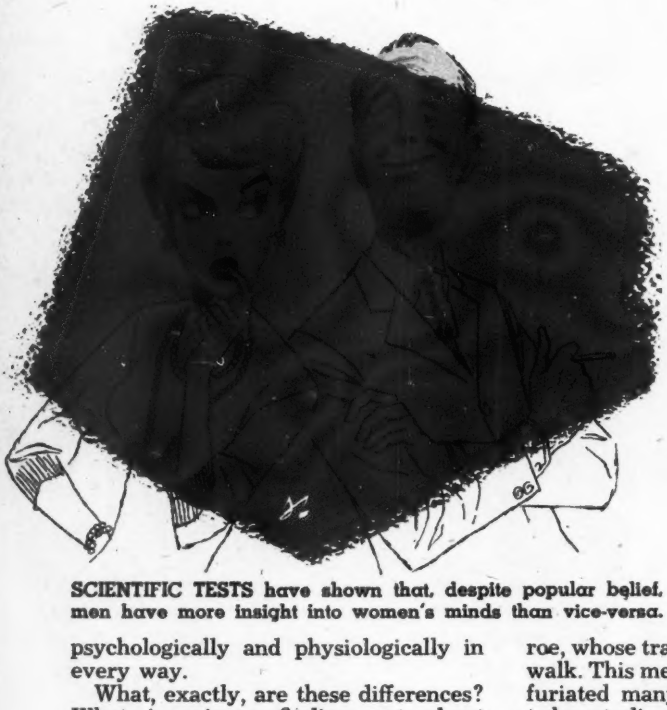
YOU are about to read the unraveling of a mystery that has befuddled mankind since the Garden of Eden. You are about to learn what makes women the way they are! The proper study of mankind is



FAIR SEX has been closely examined by scientists—with surprising results.

woman, so investigators have been putting women under their microscopes and they have come up with a whole passel of startling discoveries which explain a lot of things. Women, they are finding out, are not the same as men. (This you knew already? Wait!)

Not only are women's basic design and engineering different but they think, feel, react and see things in an entirely different manner. They are not just smaller, softer and rounder than men, as most guys innocently assume, but they are a species apart, differing psychologically and physiologically in every way.



SCIENTIFIC TESTS have shown that, despite popular belief, men have more insight into women's minds than vice-versa.

What, exactly, are these differences? What is science finding out about women's minds, emotions, body chemistry, body construction, instincts? Here are the most unique discoveries that have come to light:

1. Women are not as intelligent as men.

This is a point which has been argued since the dawn of mankind but enough evidence has come in to clinch the argument once and for all. It's true, asserts psychologist Leonard Carmichael, that girls top boys on IQ tests by several points up to the mid-teens. Elementary and high school officials also report that the lasses get consistently higher grades and better report cards than the lads. But this superiority stops about the middle of high school. Thereafter, the boys show their intellectual heels to the girls who never manage to catch up.

Psychologist Kathleen Watts helped prove this not long ago when, under the auspices of the British Medical Research Council, she gave several intelligence tests to 700 students at a number of universities. The results proved beyond doubt, Miss Watts reported, that men are the more intelligent sex. Women, she said, were particularly poor in problems which required the ability to reason. And men were much quicker to learn by practice.

This is just one of many studies which led to the same conclusion.

2. Women don't walk in that hip-swinging, provocative way deliberately —they can't help it.

Even women themselves don't realize this curious physiological fact about their sex. Take the case of Marilyn Monroe, whose trade mark is her undulating walk. This method of locomotion has infuriated many women who, according to her studio, charge that Marilyn deliberately affects the wiggle. Marilyn replies indignantly that she never wiggled, or even waggled, deliberately in her life. She says she has been walking that way since she was a child.

She's telling the truth and proof comes from anthropological studies. Women, points out Dr. J. B. Rice, have a wider pelvis than a man, thus their thighs are attached at a different angle. "Since

COLORS AFFECT women more intensely than men. And their sense of smell is keener.

their thighs are farther apart and their legs shorter," explains Dr. Rice, "many women have to walk in what appears to be a provocative fashion." So now you know.

3. *Women see colors more intensely than men.*

Ever wonder why a woman grimaces when the shade of wallpaper doesn't quite match the drapes? Or why she'll spend days searching for just the right upholstery to match the paint on the walls, rejecting a dozen colors that seem perfect to you?

It's due to the intensity of a woman's color perception. To her a red tapestry is deeper, richer, warmer than it appears to you. Mismatched ensembles jar her a lot more than they bother you.

There are other differences in the senses, scientists have found. A woman has a keener nose for odors than a man, which explains why she'd be the first to start from her chair and sniff a gas leak. Her sense of taste is sharper and some scientists also believe she has a better sense of touch.

4. *Except in rare instances, women lack the capacity to achieve genius.*

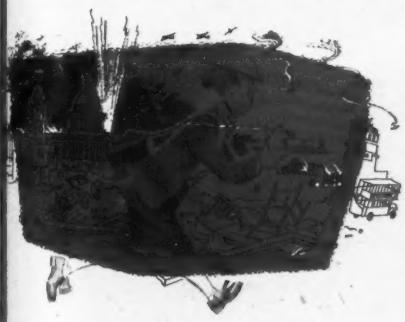
Hunt through the arts and sciences for lady geniuses and you'll find slim pickings. There are virtually none in music ranking with Beethoven, Bach, Brahms—or ranking anywhere at all as serious musicians. Can anyone name a woman painter of the stature of Titian, Rembrandt, Picasso, Da Vinci? Are there any ladies qualified to sit in the front row of masterful writers alongside Shakespeare, Tolstoy, Corneille, Racine, Goethe? Off-hand, can you name a great woman inventor? More than a couple of great women physicists? Great medical pioneers?

Sorry, but the conclusion of famed scientist Elie Metchnikoff would seem inevitable: "Genius," he declared, "is a masculine quality, just as a beard is or strong muscles are."

5. *Woman's No. 1 concern throughout her existence is with people and life, while a man's chief preoccupation is with objects.*

This is probably the greatest single distinction between the sexes, sociologists and psychiatrists agree. Understand this fact [*Continued on page* 150]

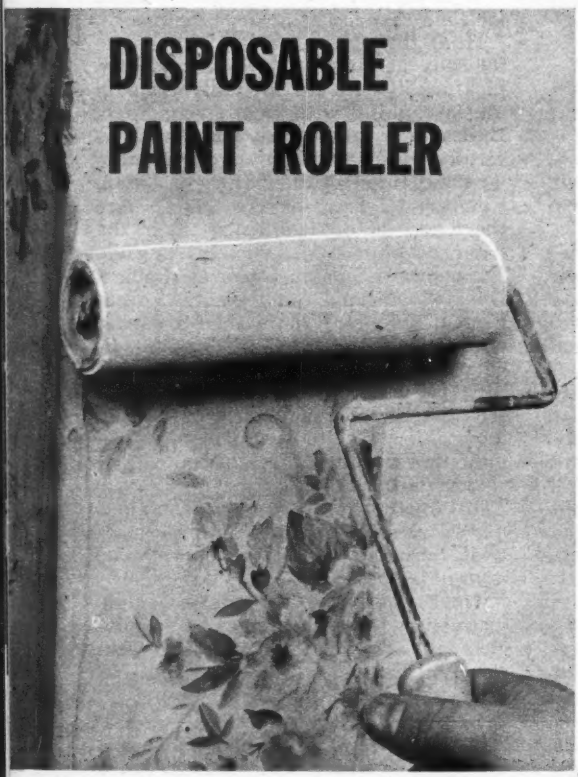
IN EMERGENCIES it was found that women did their jobs with calmer deliberation.



LOWER CENTER of gravity allows women to sit without fidgeting, even though bored.

MECHANIX ILLUSTRATED
BRIGHT IDEA AWARD

DISPOSABLE PAINT ROLLER



CHUCK IT AWAY when job is done. You don't have to fret with time-wasting clean-up job.

CHUCK-AWAY fits standard seven-inch size paint roller handles.

ROLLER applies smooth coat with oil and latex paints and varnishes.

CHUCK-AWAY paint rollers come three in a package for 79 cents. When you finish with one, you just toss it into the garbage can and forget about giving yourself the usual turpentine bath to get the paint off your carcass. The Chuck-Away paint roller is made of polyester. It can be used for all oil and latex paints and varnishes. It also puts on a smooth, even coat of enamel. The rollers fit all the standard seven-inch paint roller handles. They can be put on and taken off in a jiffy. Do-it-yourself enthusiasts will like the unique disposable feature. The packaged Chuck-Away paint rollers are available from Harry Serwer, Inc., 271 North Avenue, New Rochelle, N.Y. •

WIN $50

MI will award $50 each month to the first person who tells us of a new and useful gadget that is patented and in production. Manufacturers are also eligible for this award. Pictures and a description should be sent to Bright Ideas Editor, Mechanix Illustrated, 67 West 44th Street, New York 36, N. Y.

RIN TIN TIN'S SECRET RADIO

CANINE KING Rin Tin Tin gets commands from his trainer, Frank Barnes, from a Regency receiving set tied around his neck and a tiny speaker inside one ear, during the filming of Screen Gems' TV movies The Adventures of Rin Tin Tin. Barnes gives dog orders via mike. System saves time, costly long shot retakes. •

CANINE ACTOR is only one to hear orders from trainer through receiving set tied around his neck. Transmitter consisting of a pre-amplifier and oscillator will transmit for a distance up to a quarter of a mile, depending upon the length of antenna used. Flashlight battery powers the unit.

TINY speaker placed inside dog's ear transmits trainer's commands.

CLOSE-UP shows the pre-amplifier, transmitter composed of oscillator and mike and a Regency receiver.

TRAINER Barnes' orders to dog are not picked up by the sound track.

More Fun FROM YOUR TAPE RECORDER

By Michael Sheridan

ON the West Coast recently, three newly purchased tape recorders were put to unusual uses. One obtained peace for an embattled neighbor; another recorded the underwater gossip of fish; the third played watchdog to a satellite.

These are only three of the many and varied uses of the estimated 8,000,000 tape recorders (about one third are sold for home consumption) in operation in America today—a figure expected to hit 10,000,000 by 1960.

What troubles most dealers is that the average home user is amazingly unimaginative with his set. If he loves music, he may collect a fine library of tapes from TV and radio recordings. But too often the machine is just another gadget, and after a few parties it's buried in a closet to gather dust.

This, according to the dealers who expect to sell 250,000 home recorders in 1958, is because people don't know what or how much can be done with their machines.

Take the three cases mentioned above. Recently in

RIGMAROLE tape recording game amuses Jack, Bobbie Linkletter on sofa, Elsie Lee, author Sheridan.

Photos by Sid Avery

AMPEX COMBO, far left, is used by disc jockey Linkletter, son of famed radio-TV personality, in his work. Bobbie times music and dialogue.

JACK tapes show script, middle photo. Music will be taped separately on Ampex. Both tapes will be cut, edited, spliced for complete show.

BOBBIE, left, prepares dinner from playback of TV, radio recipes. Successful ones go into her file. The ones hubby dislikes are wiped off tape.

GELOSO $179.95 portable will operate from auto lighter with special $24.95 inverter.

a Los Angeles store, a customer told a salesman, "My hobby is skin diving. I thought I'd try to record sounds of fish." The salesman recommended a sturdy recorder with a good mike and made the sale. A month later the customer returned for more tape and to report his success. He had placed the microphone in a watertight container that could still pick up sound and, attaching it to his body, recorded the underwater fish talk.

The Embattled Neighbor was a man who couldn't sleep. The dog next door had nightmares and whined, howled and scratched all night. Finally, armed with his new tape recorder, the sleepless one recorded the pandemonium for nocturnal playback—at full volume. After three sessions, there was no more barking. Also, no dog!

The third case concerns an astronomy student at UCLA. He used his tape recorder to gather information on Sputnik I. Later, given to scientists studying the behavior of satellites, the data was more valuable than some of the official records.

Now these were highly unorthodox uses for a tape recorder but they vividly illustrate the fact that it is more than just an extra phonograph.

A tape recorder can be a great party booster. You can have loads of fun, for instance, by using the different speeds—such as recording at slow and playing back at fast speeds, or vice versa. Or recording portions of the party on the sly, playing back the guests' remarks later.

A good trick is to prepare party recordings beforehand. At intervals of three minutes, record questions or directions for a stunt involving sound,

GBC portable, left, is $169.50, comes with tape, rewind reel, pigskin leatherette case. NORELCO three-speed, dual-track portable has excellent microphone. The unit is $269.50.

addressed to each guest by name. When you play the reel, the guest has three minutes to perform his part while you record him on the blank tape between his question and the next. This needs quick, expert manipulation of the machine from play to record and back again, but a kitchen timer or stop watch will avoid overlap.

Another enjoyable party game is guessing popular songs, with a variation. Pre-record songs at one speed and play them back at the other. Anyone correctly identifying the songs gets a prize.

The old parlor game of Rigmarole is greatly improved with a tape recorder. This is the one where a person starts a story, breaks off at a crucial point and the next person continues, and so on around the group. Played back, the results are always fun to listen to.

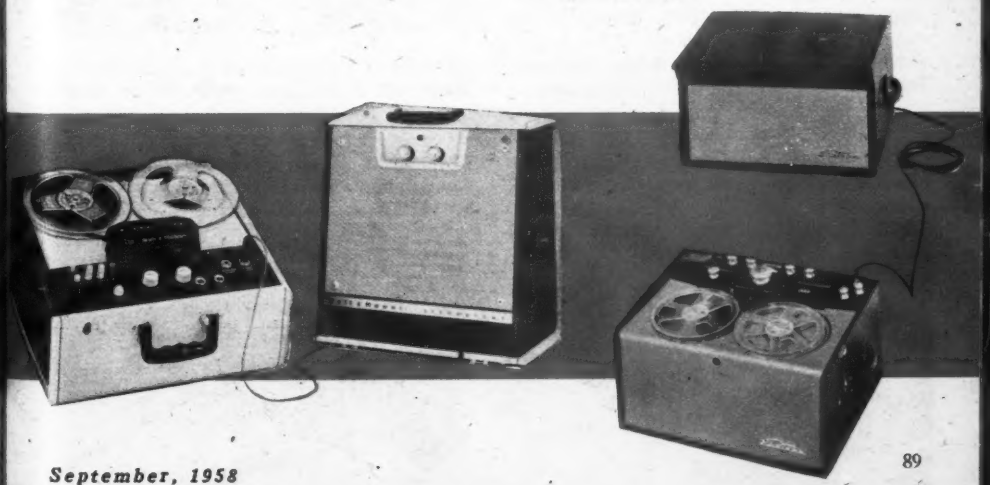
Two tape recorders make it possible to sing duets with yourself. Each guest can sing the first part to one recorder, repeat the second part to the other recorder. The tapes are then played simultaneously. Use of a third recorder, of course, allows you to make a single tape of the whole thing—if the results are worth preserving!

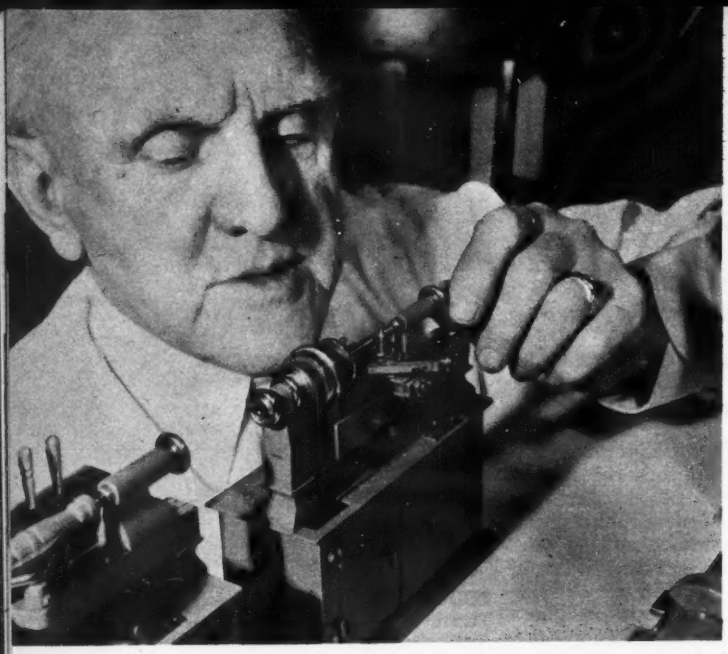
Today there's a growing use of tape recorders for serious or sentimental purposes. Family events, from weddings to your child's first words and participation in debates or graduation, are worth recording for the future.

MIDGETAPE 300, $249.50, records for hour. Phone accessory to tape phone calls, $10.

What about a tape recorder for the woman of the house? One Dallas housewife is a devotee of all TV and radio cooking programs. The tape recorder takes note of recipes. She concentrates on watching. Later she prepares and cooks to [*Continued on page* 152]

BELL & HOWELL 771 Stereotone recorder, left, is $199.95. Companion speaker is $99.95. WEBSTER 290 Stereophonic three-dimensional sound tape recorder. Cost: about $389.50.

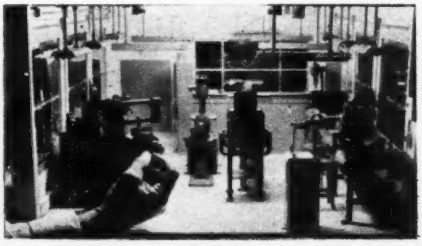




MACHINE LATHE really works; made of soldered chrome-plated brass, it is a ⅛" scale model. The machine at left is a wood-turning lathe.

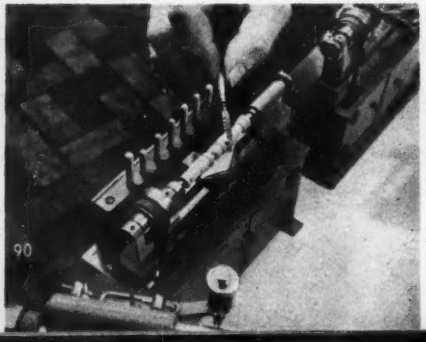
MIDGET MACHINE SHOP

SINCE 1940 Richard Kirmss, a 73-year-old Brooklyn machinist employed in classified government work, has been building his model machine shop. Besides what you see here, the little brick building contains an office with file cabinets, a stenographer at her typewriter, a tiny pencil sharpener and other authentic details. Tiny fluorescent lamps light the shop, which has a milling machine, wood lathe, bench lathe, hardening furnace, and tool grinder. Kirmss has been a machinist over 50 years.

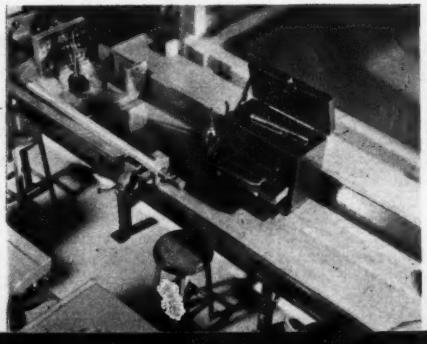


COMPLETE SHOP, shown in place, can be taken out of building on its sliding floor.

LATHE CHISEL, tiny but perfect, is one of set in rack on model wood-turning lathe.

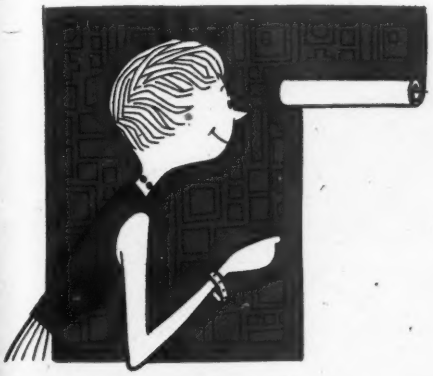


TOOL BOX contains hammers, hack saw, etc., is shown next to ordinary lead pencil.



ROLL-ON SHOE POLISH for home shoe shine kits would keep stained fingers and shirtcuffs away. Vic Fuller, Lexington, Ky.

HANDLEBAR RADIO RECEIVER so Mother could call her boy home come chore or supper time. Carol Fedorovich, Berlin Center, O.



ROLL-ON WALLPAPER for home paperhangers—gummed on one side to avoid a mess. Hal W. Stephenson, Wichita, Kans.

INVENTIONS WANTED!

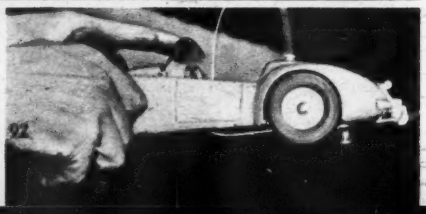
Is there a gadget you think should be invented? If so, send its description to Inventions Wanted Editor, MECHANIX ILLUSTRATED, 67 West 44 St., N.Y. 36, N.Y. Each one printed will be awarded $5.

CONVERTIBLE ROOF for pickups would be handy whether truck is used for fun or work. Andrew Turnbull, Panama City, Panama.

OVAL PAINT CANS—especially in small sizes—would make using a wide brush easier. Alfred Gargano, Bridgeport, Conn.

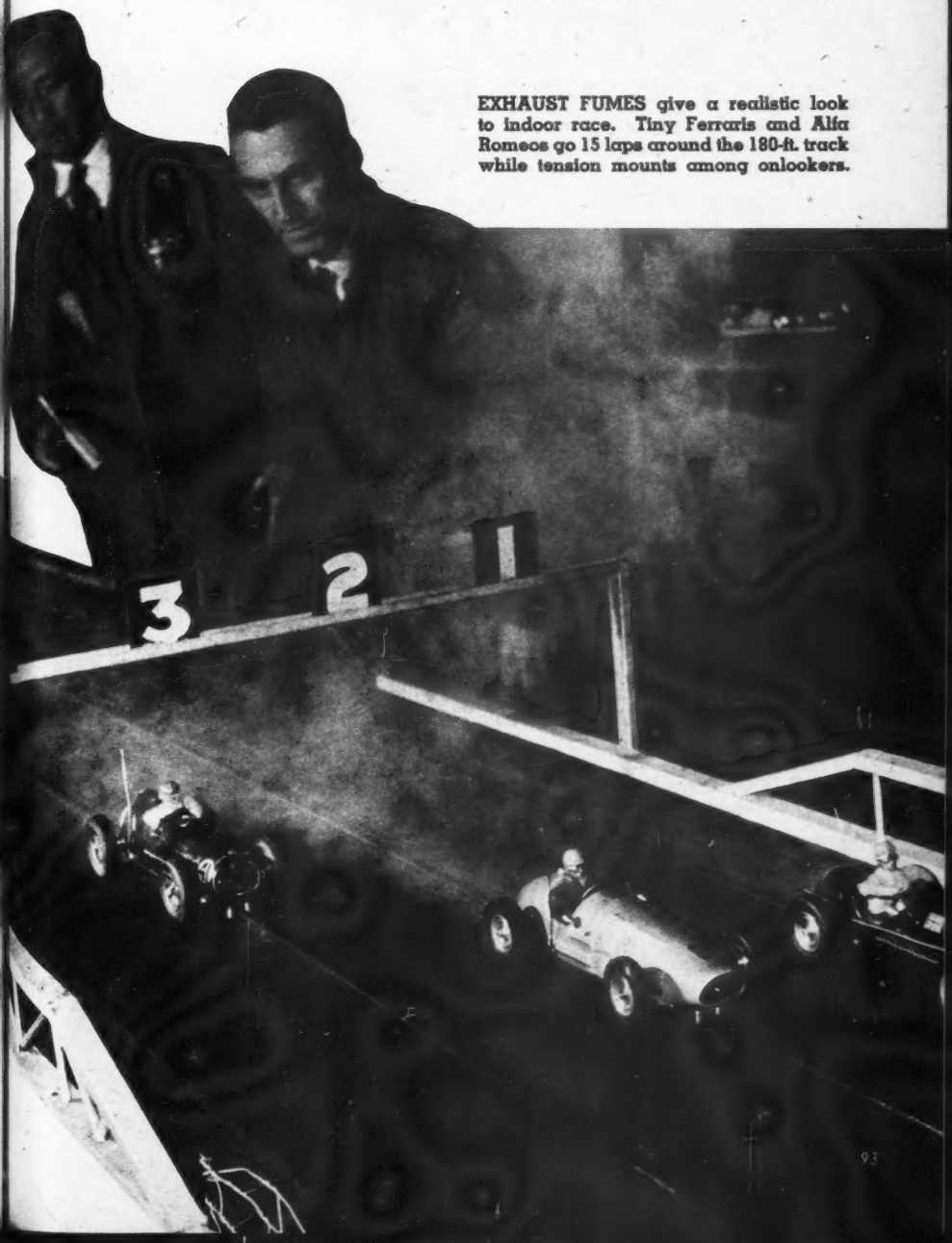
Newest Sport

RACING MINIATURE CARS



CHRIS CROCKETT, a genuine soup-up artist who helped start miniature car racing, fills a tank with diesel fuel. An eggcupful will take the racer around the track 149 times. Wire trigger (middle picture) stops engine. Bottom picture: revving up before race. Cars are scale models.

A WORLD craze has been started for racing model cars in actual competition with each other rather than against the clock. The pictures shown here were taken in England, home of the new sport which has spread to many countries. Owners of authentic model racers, which cost $50-$60, get their kicks tuning, adjusting needle valves and fuel mixture and watching the tiny bombs roar around the guide-rail track at 60 mph. •



EXHAUST FUMES give a realistic look to indoor race. Tiny Ferraris and Alfa Romeos go 15 laps around the 180-ft. track while tension mounts among onlookers.

HOW TO ROLL YOUR OWN Business

By Harry Kursh

THE legend "You can't do business from an empty wagon" under a print of an old Yankee peddler hanging on the office wall of Howard F. Leopold—president of the Ero Manufacturing Co., makers of auto seat covers—ignited a money-making idea back in 1955.

"Why, of course, that's it," Leopold thought, "Why not put the seat covers in a caravan and take them out to the public, instead of waiting for the customers to come to us?"

Leopold got in touch with Sears, Roebuck and Co. What would they think of the idea—selling seat covers direct from a trailer on one of their park-

ROLLING ZOO belongs to Chicago's Lincoln Park, could be run as private enterprise.

SEAT COVER TRAILERS broke sales records by taking the merchandise to parking lots.

MOST FAMOUS business on wheels is Good Humor Corp., started 20 years ago with a cart.

ing lots? Sears not only went for the scheme but offered the trailer.

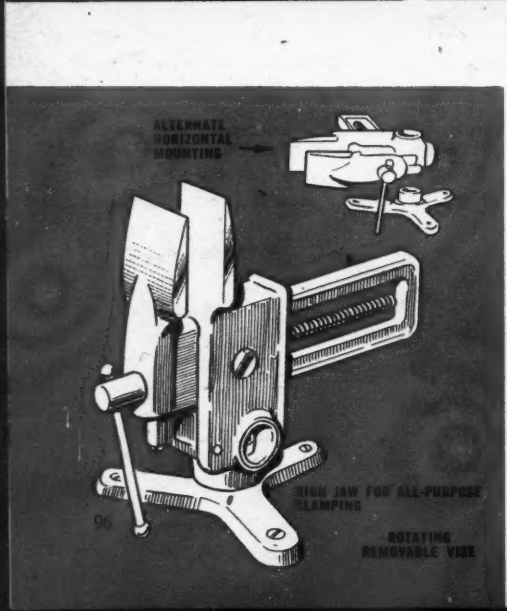
Today Leopold's firm has 11 Seat Cover Caravans out on the road. Sales at such locations at Atlanta, Buffalo, Norfolk and Milwaukee have rocketed as much as 500 per cent above normal.

All over the United States thousands of enterprising Americans, as well as huge corporations, are raking in vast bundles of cash by going back to the principles of the Yankee peddler days.

These profit-minded individuals are putting a variety of business ideas on wheels, using just about everything from con- [*Continued on page* 164]

MOBILE SHOWROOMS, owned by manufacturer of sanitation supplies, carried complete line directly to customers, showed them big choice of items, drew larger orders.

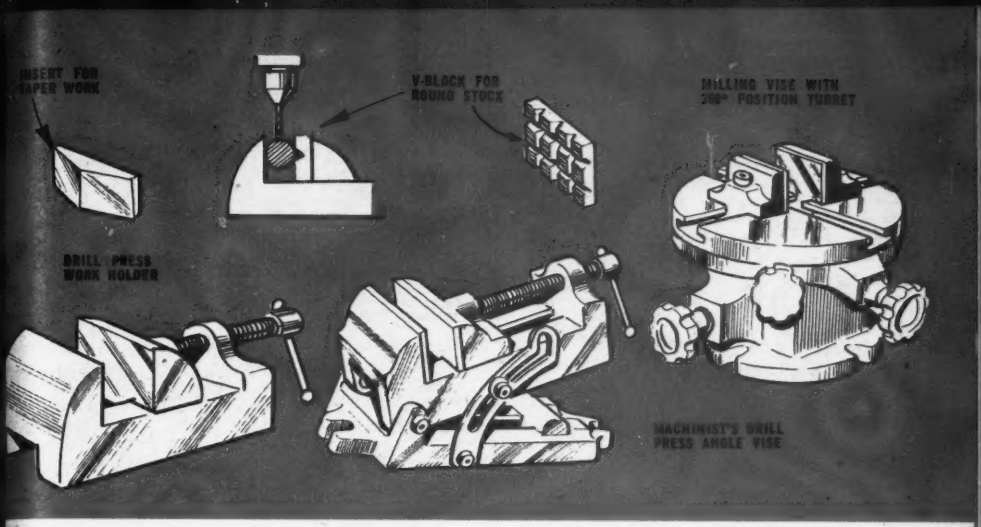
THE VISE



This is the ninth of a series of articles on hand tools.

A VISE is a tool with two screw-adjusted jaws between which an object is firmly held while being worked. This general description covers many types of vises which vary greatly in size and application. However, their basic functions are the same. All are clamping and holding tools that grip stock which would otherwise be impractical (or impossible) to shape, saw, break or cut.

The woodworker's vise is distinguish-



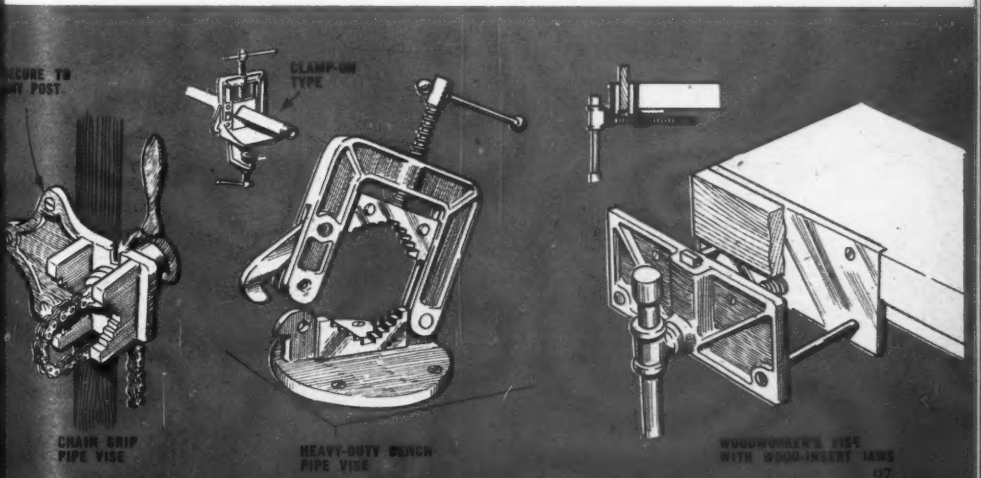
able from the metalworker's by its wide, wood-lined jaws. It clamps to the left-hand overhang of a workbench (to the right if you're left-handed). In either case there should be sufficient clearance at each side of the bench to accommodate work that projects beyond either end.

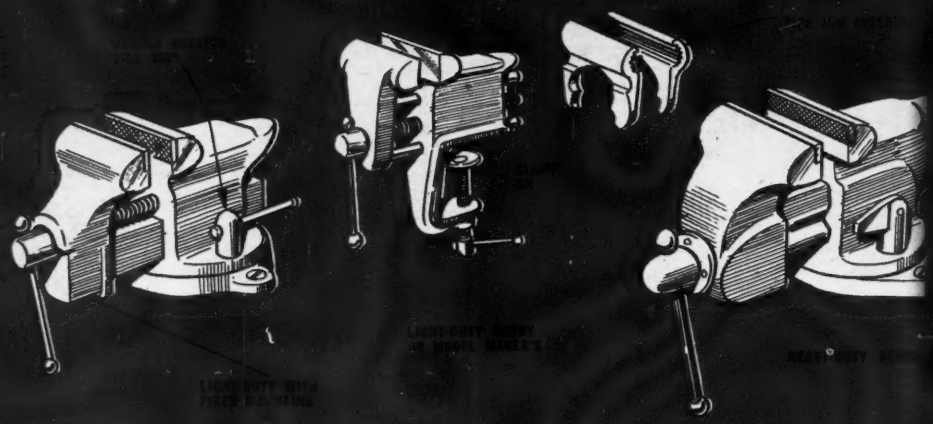
The woodworker's vise is often referred to as a "bench" vise because, once installed, it becomes an integral part of the workbench. Its size is determined by the width and depth of the jaws. Jaw widths start at about six inches with a three- to four-inch depth and a maximum opening of nine inches. The stationary (back) jaw is often fitted into a recess cut in the front edge of the bench so that it does not project. It is usually L shaped and attached to the bench from the underside through the foot of the L. Most standard designs call for fitting the vise to a 2¼-inch bench top.

When installing a woodworker's vise be sure the jaw-tops are flush with the top surface of the bench.

When purchased, these vises appear to have metal jaws; this is because they are sold without facings. The facings are usually kiln-dried maple and are easily attached to the vise jaws. Also, these facings can be reversed when they have worn on one side. Be sure the facings are parallel to each other to insure a firm and even grip.

The jaws of a vise usually open and close on the screw principle. Most common is the continuous screw and solid nut mechanism which opens and closes





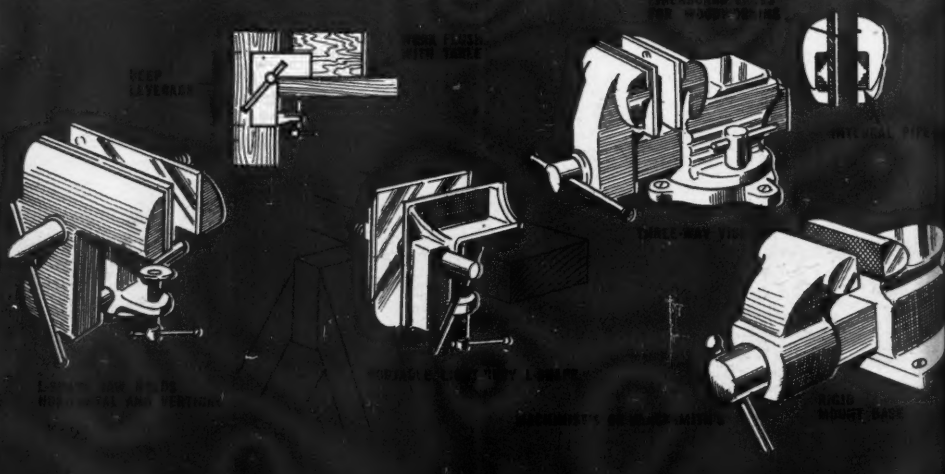
the jaws progressively to the desired tightness or width. There are, however, certain refinements of this mechanism that may influence your choice of a vise.

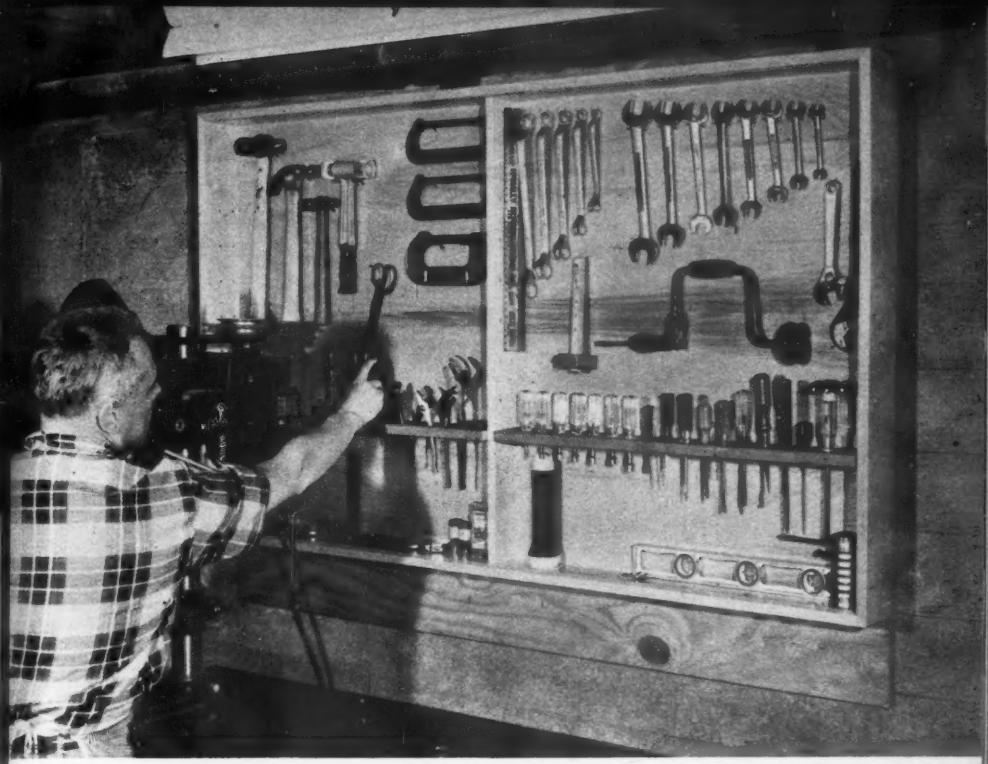
One of these is the so-called "quick-action" mechanism. This consists of a screw with interrupted threads that operates in a half-nut. A slight turn of the handle disengages the screw and permits the moveable jaw to slide back and forth freely. A turn of the handle in the opposite direction re-engages the screw in the nut and locks the jaws in place.

Another type is the continuous screw with a spline down its length. This too is quick acting in that it permits the jaw to be pulled open without having to turn the handle. The screw is then engaged or disengaged at any point by merely turning the handle to left or right.

You may want a built-in *stop* on the moveable jaw of your vise. This is a small steel bar contained by the jaw when not needed. When in use it projects above the jaw and, thus, above the bench top. It is usually used as a stop for jobs which are not held in the vise but are laid flat on the bench—surface planing for example. The edge of the board when butted against the top is kept from moving while being planed.

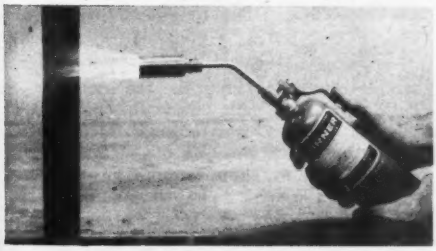
The stop is also used in conjunction with a T-shaped *bench dog* recessed in the bench top on a centerline with the vise stop. When in use the bench dog, like the vise stop, projects slightly above the surface. [*Continued on page* 130]





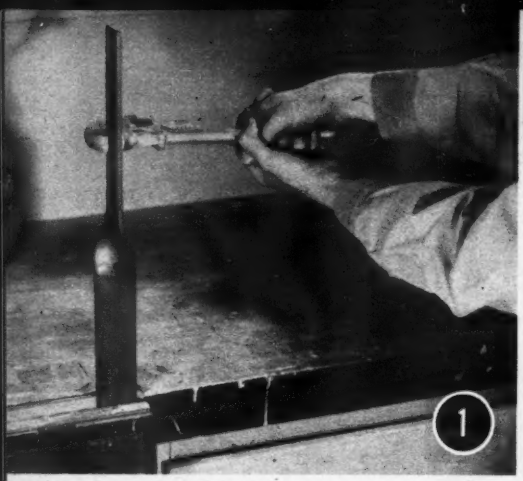
TOOL BAR

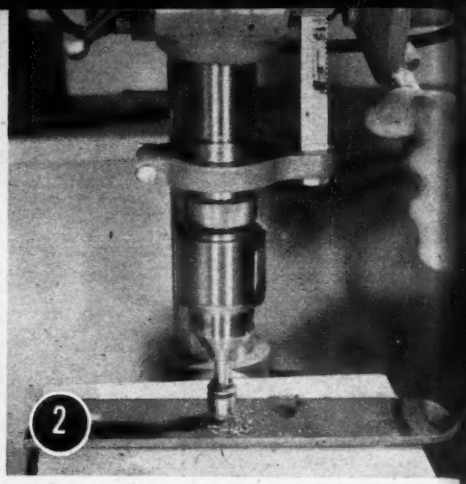
Keep your tools in view by building this joist-suspended tool cabinet.

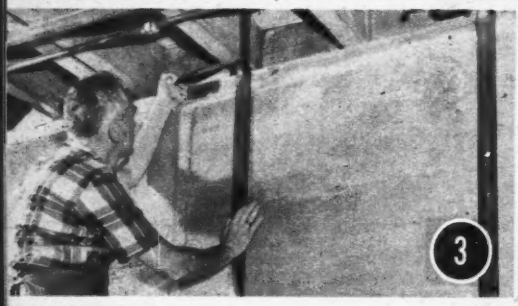


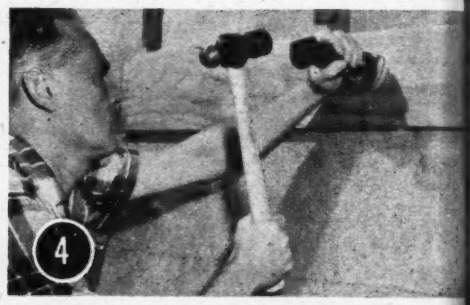
THE easiest way to find the right tool is, of course, when it is in plain view instead of being buried in a drawer. This handy tool bar practically forces you to return each tool to its proper place. A pair of by-passing doors protects them from dust. [*Turn page*]

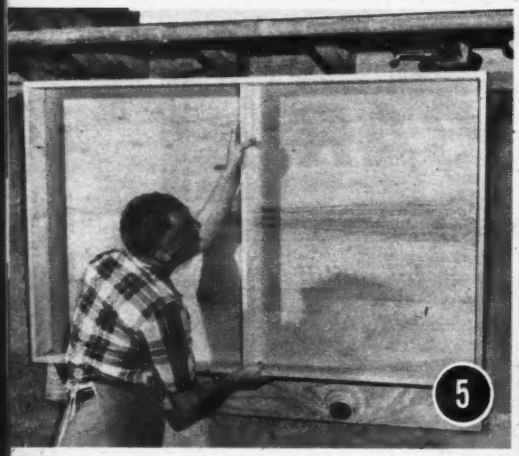
To bend strap iron, heat it red-hot over kitchen burner or by means of a torch.

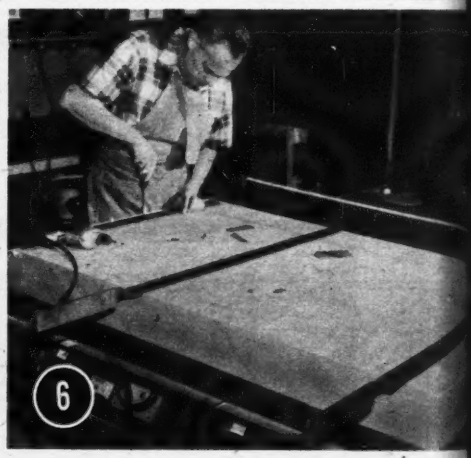




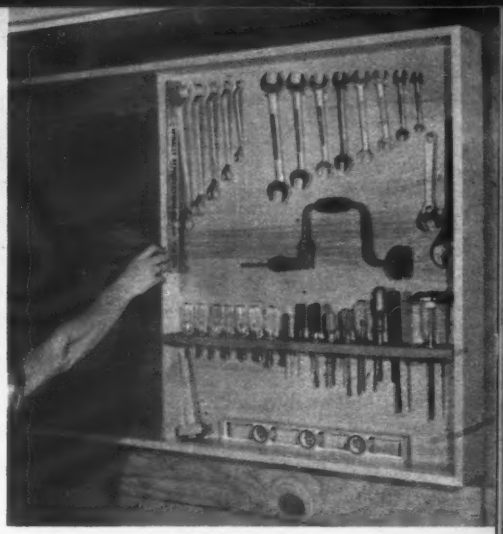








1. Set the red-hot strap iron in a vise and bend it as shown with a wrench. 2. Drill and countersink three holes in the short end and four holes in the long part of the iron. 3. Temporarily fasten the three strap iron supports to the cellar ceiling joists by means of C clamps as per photo. 4. Nail a supporting strip of ¾-inch plywood, about as long as the cabinet, to cellar wall, an inch below the bottoms of the iron bars. 5. Rest cabinet on this strip and transfer the position of the bars to the cabinet top. 6. Then remove cabinet and screw bars to back as shown; use flatheads.

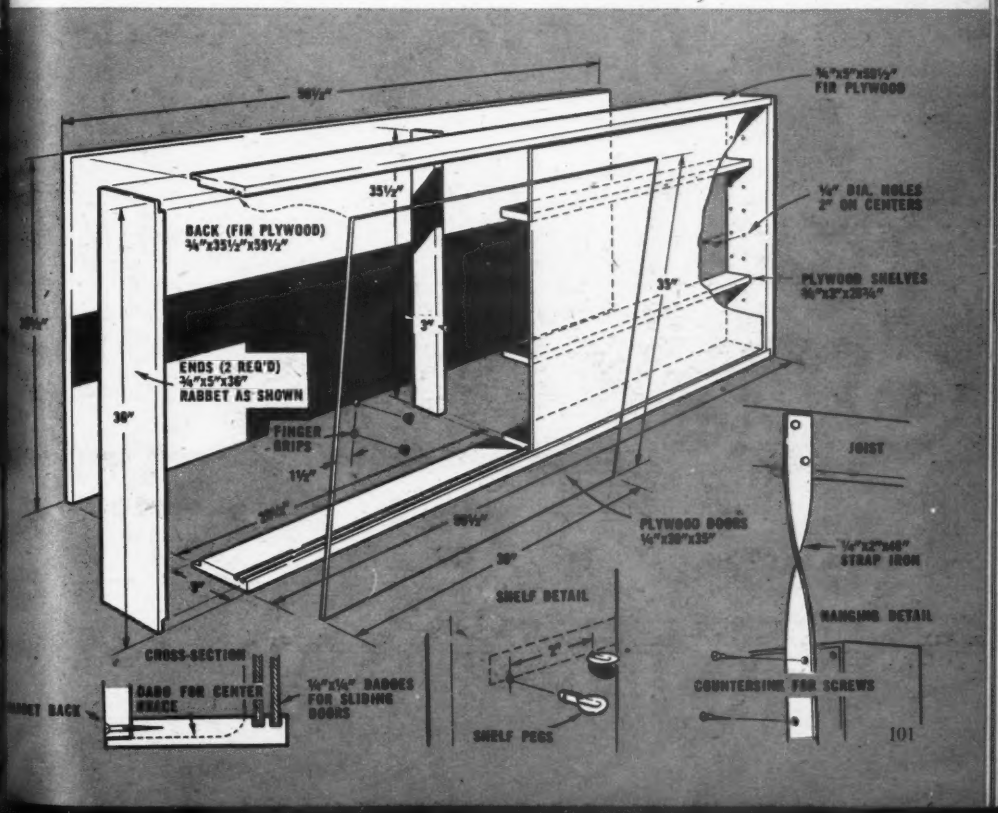


FASTEN BARS to cellar ceiling beams by means of three flathead screws to each bar.

SLIDING DOORS, which by-pass each other, will keep tools dust-free in your workshop.

Instead of the usual ¼-inch back, this cabinet has a sturdy ¾-inch plywood back. The reason? So that brass L-hooks can be screwed into the back to accept tools for an orderly display. You will find that L-hooks, which are available in several lengths, are better looking and more practical than nails for mounting tools.

Drill a series of half-inch holes in a board as shown and mount it to the back of the [*Continued on page* 147]



ELECTRIFIED TOTE BOX

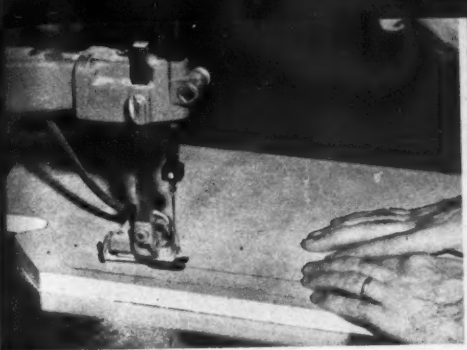
Small power tools can be connected in a jiffy to this tool box with its self-contained outlet.

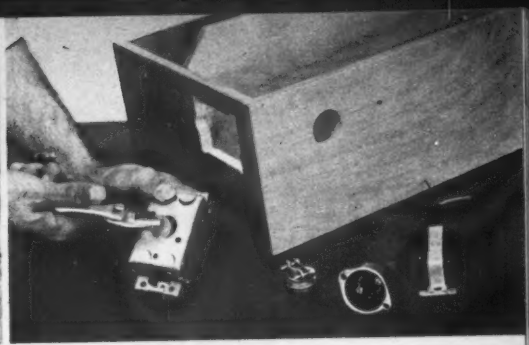
THIS tool toter features a built-in junction box which picks up electrical current at the recessed motor mount on the side and feeds it into a duplex outlet installed in the end—a convenient arrangement for those who make regular use of portable power tools. Note that extension cord coils handily around the uniquely shaped plywood box handle.

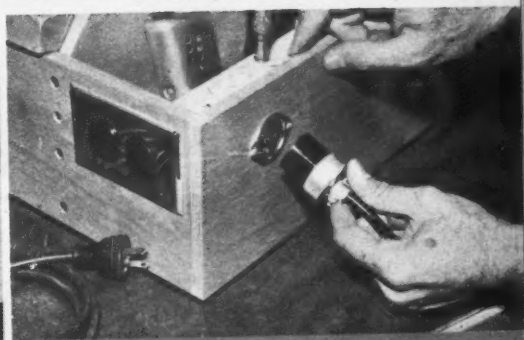
The box can be built in an hour or two by simply following the plans on the opposite page. Use either stock lumber or plywood. Finish with a coat of shellac followed by a couple coats of varnish.

The advantage of the electrified tote box is that [*Continued on page* 130]

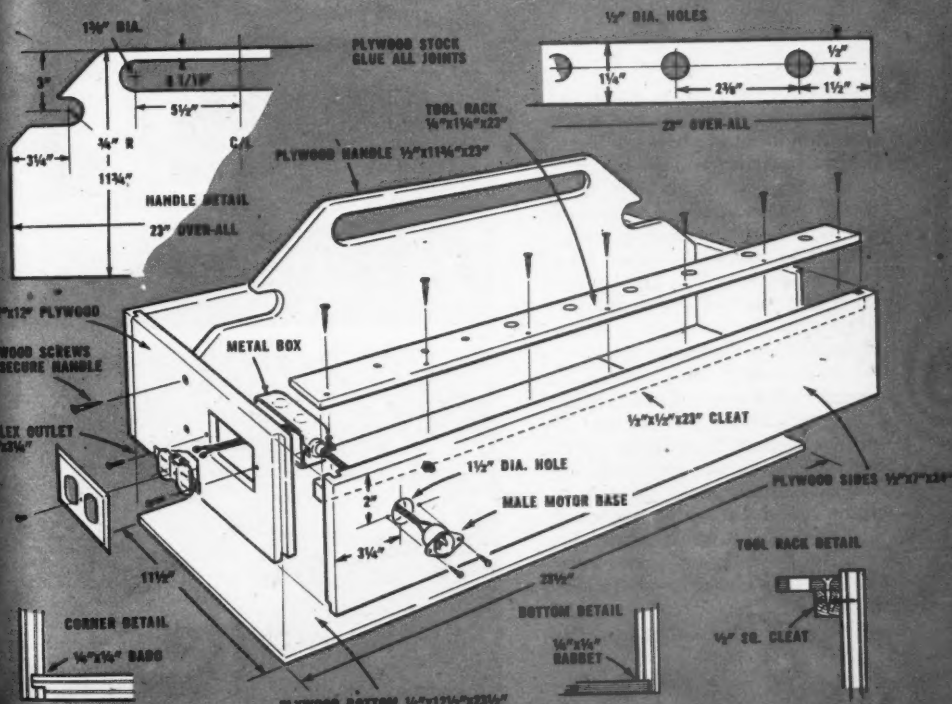
EXTENSION CORD need not be disconnected when moving tool box away from power outlet.







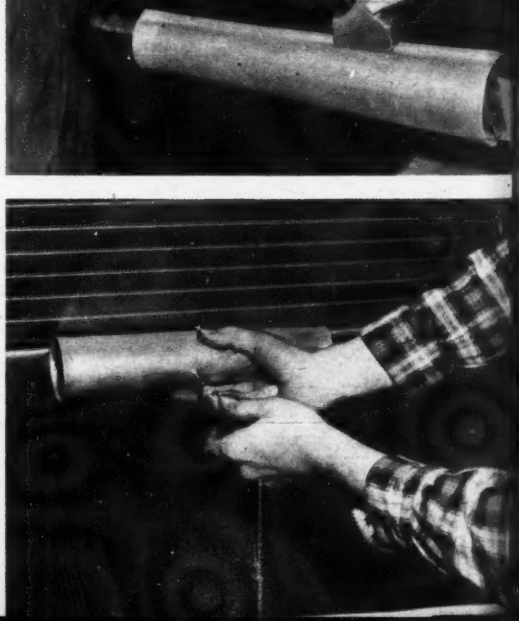
TOP LEFT PICTURE shows the handle-partition being cut on a jigsaw. The remaining pictures illustrate how the duplex outlet, junction box and motor mount are installed.



AUTOMOBILE UMBRELLA SCABBARD

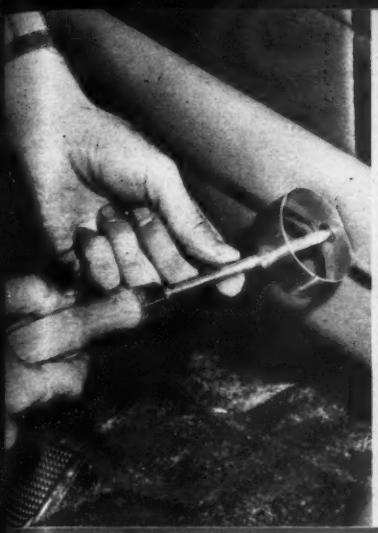
By Clarence Martin

Every car owner will welcome this handy rainy day accessory.



AMONG some other profound problems of our age is the question of where to stash a wet umbrella after you've brought it into the car. Two schools of thought have debated this issue without any noticeable progress. The Radicals have long maintained that the only place for a wet umbrella is under the front seat—out of sight and out of mind. The Conservatives, on the other hand, have tended to accept the premise that automobiling umbrellas are worthy of no less respect than when serving their natural rain-shedding function, and have therefore championed the alternative of resting these apparatuses on the floor while holding them vertically—and gingerly—between the knees.

The author feels that neither



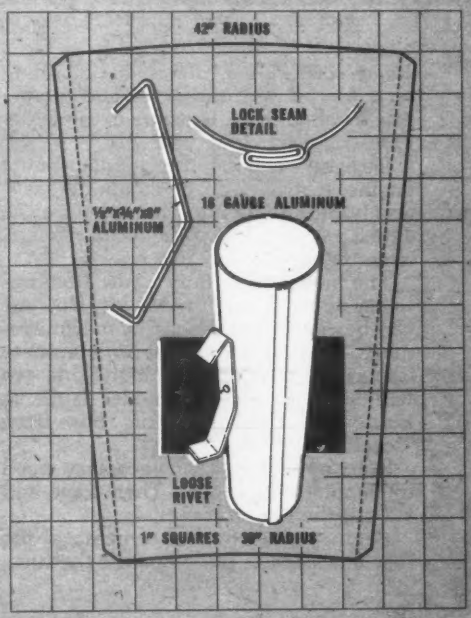
ACCOMPANYING PHOTOGRAPHS illustrate the installation and shaping of the umbrella scabbard. The diagram at lower right details the pattern dimensions for the scabbard.

of these practices have succeeded in solving the problem. So it is with some pride that he offers herewith his own practical and, he hopes, acceptable solution.

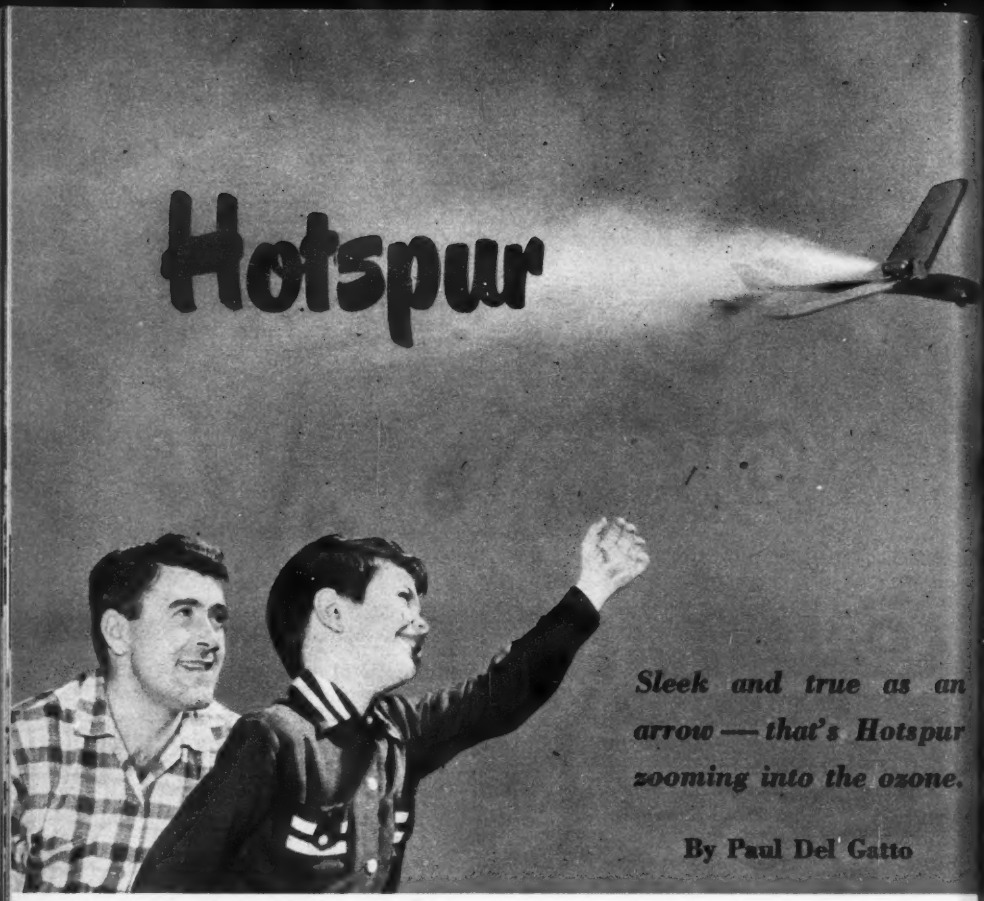
The umbrella scabbard is a sturdy device that should prove its worth the very first time it is used. When dry, the scabbard will protect the umbrella from damage and, to some extent, from dirt.

Any one of three techniques may be used to install the scabbard on the back seat of the car. The clip attachment, from an eight-inch piece of 1/8x3/4-inch aluminum, was made to fit a late model Chevrolet. However, by altering the dimensions slightly it will fit other makes and models as well, and the clip permits easy removal of the unit when not in use. The scabbard may also be screwed permanently to the base of the seat or else slipped into a sheet metal ring as shown in the accompanying photographs.

To make this accessory draw its pattern on graph paper as shown in the accompanying diagram. The pattern is then transferred to a piece of 16-gauge, sheet aluminum and cut to size. Now turn the seams, roll the metal to the required funnel shape, seal the seams with a seaming tool, and install according to your preference. Painting the scabbard is up to you. It can be painted a solid color or in gay candy stripes—to suit the tastes of the ladies. •



Hotspur



Sleek and true as an arrow — that's Hotspur zooming into the ozone.

By Paul Del Gatto

IF you're looking for a fast-climbing model of graceful lines and simple construction, then Hotspur is the wide-blue-yonderbird for you.

Designed around the popular Jetex engine, Hotspur can be catapulted several hundred feet into the air before the Jetex power takes over and rockets it even higher.

The model takes only a few evenings to construct. Using the MI kit, Hotspur can be completed in less than two evenings. But in order not to eliminate important construction highlights we will assume that the model is being built, not from the kit, but from "scratch."

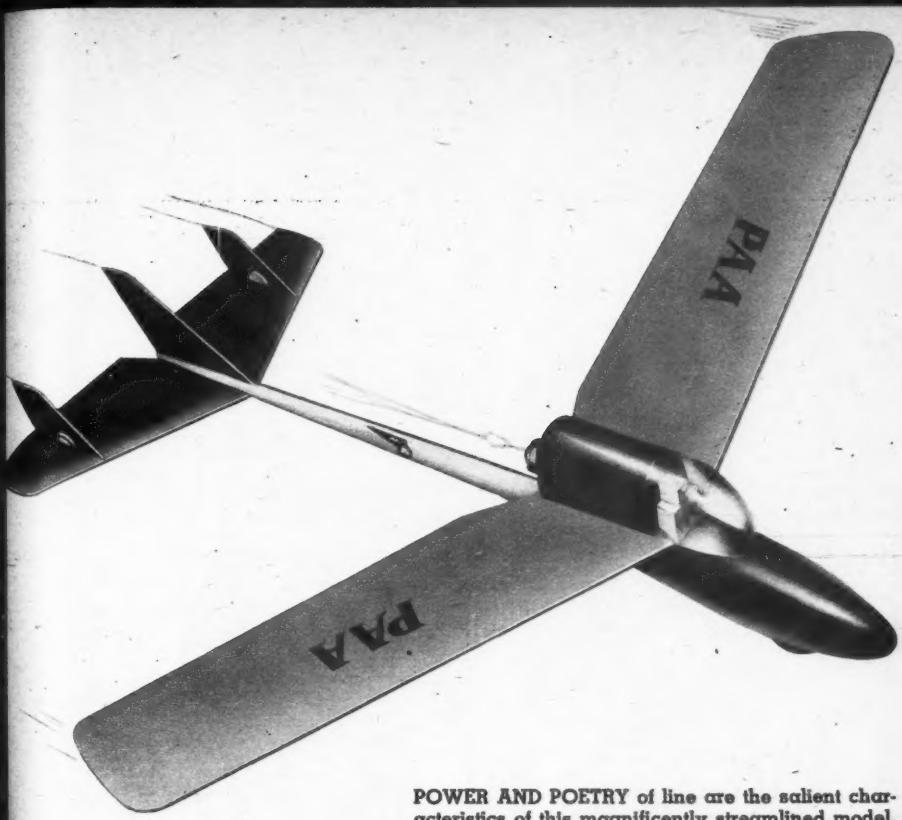
Start by selecting the necessary wood to complete the model. Then trace and cut out the various parts.

Begin assembly by cementing the fuselage sides in place against the fuselage centerpiece and boom. When thoroughly dry, roughly trim the fuselage to shape.

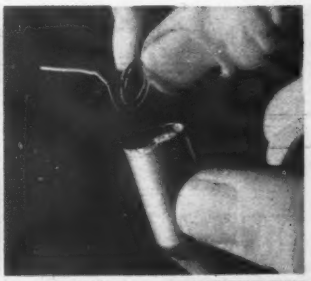
Continue by shaping the solid sheet balsa wings to the airfoil section. These can be rough-shaped and sanded separately or else laid out on a single piece of sheet balsa as indicated by the phantom outline on the drawing. The wing panels are then cut apart after shaping and when ready for assembly.

Before joining the wing panels, bevel their inside edges to fit at the dihedral angle. Cement the plywood dihedral joiner into the slot on one wing panel and allow it to set before cementing the remaining panel. When dry, apply another coat of cement for strength.

Incidentally, the wing is notched on the leading edge to accommodate a balsa dummy of the required size used in competition events. But if you're building



POWER AND POETRY of line are the salient characteristics of this magnificently streamlined model.

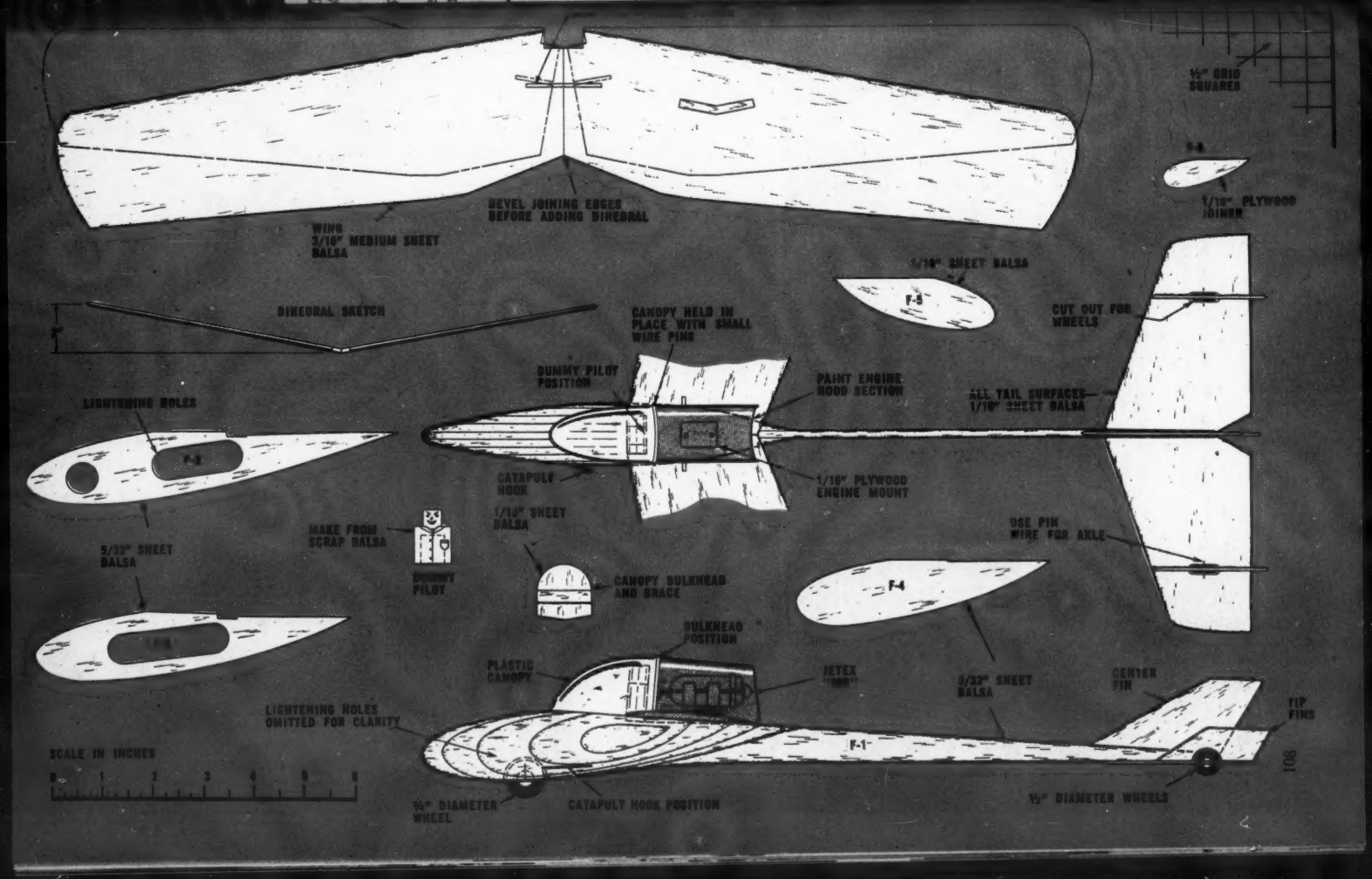


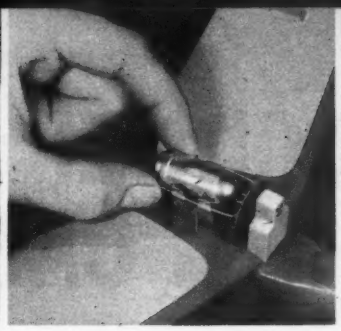
SCRAPE VARNISH from adjoining ends of pellets in a two-pellet fueling to assure continuity of firing.

JETEX FUEL PELLET is inserted into the main case and seated firmly against base disk and filler block.

IGNITER WICK'S end is extended an inch or two in order to thread through the jet nozzle in the end cap.

GAUZE DISK, pressed firmly into main case, will hold the coiled wick tightly against the face of fuel pellet.


½" GRID SQUARES
F-2
1/16" PLYWOOD JOINER
BEVEL JOINING EDGES BEFORE ADDING DIHEDRAL
WING 3/16" MEDIUM SHEET BALSA
1/16" SHEET BALSA
F-5
CUT OUT FOR WHEELS
DIHEDRAL SKETCH
CANOPY HELD IN PLACE WITH SMALL WIRE PINS
DUMMY PILOT POSITION
PAINT ENGINE HOOD SECTION
ALL TAIL SURFACES— 1/16" SHEET BALSA
LIGHTENING HOLES
F-3
CATAPULT HOOK
1/16" PLYWOOD ENGINE MOUNT
1/16" SHEET BALSA
MAKE FROM SCRAP BALSA
USE PIN WIRE FOR AXLE
5/32" SHEET BALSA
DUMMY PILOT
CANOPY BULKHEAD AND BRACE
F-4
BULKHEAD POSITION
PLASTIC CANOPY
JETEX "100"
5/32" SHEET BALSA
CENTER FIN
TIP FINS
LIGHTENING HOLES OMITTED FOR CLARITY
F-1
SCALE IN INCHES
0 1 2 3 4 5 6
¾" DIAMETER WHEEL
CATAPULT HOOK POSITION
½" DIAMETER WHEELS



TRIM wick to project about ¼ inch outside of the nozzle.

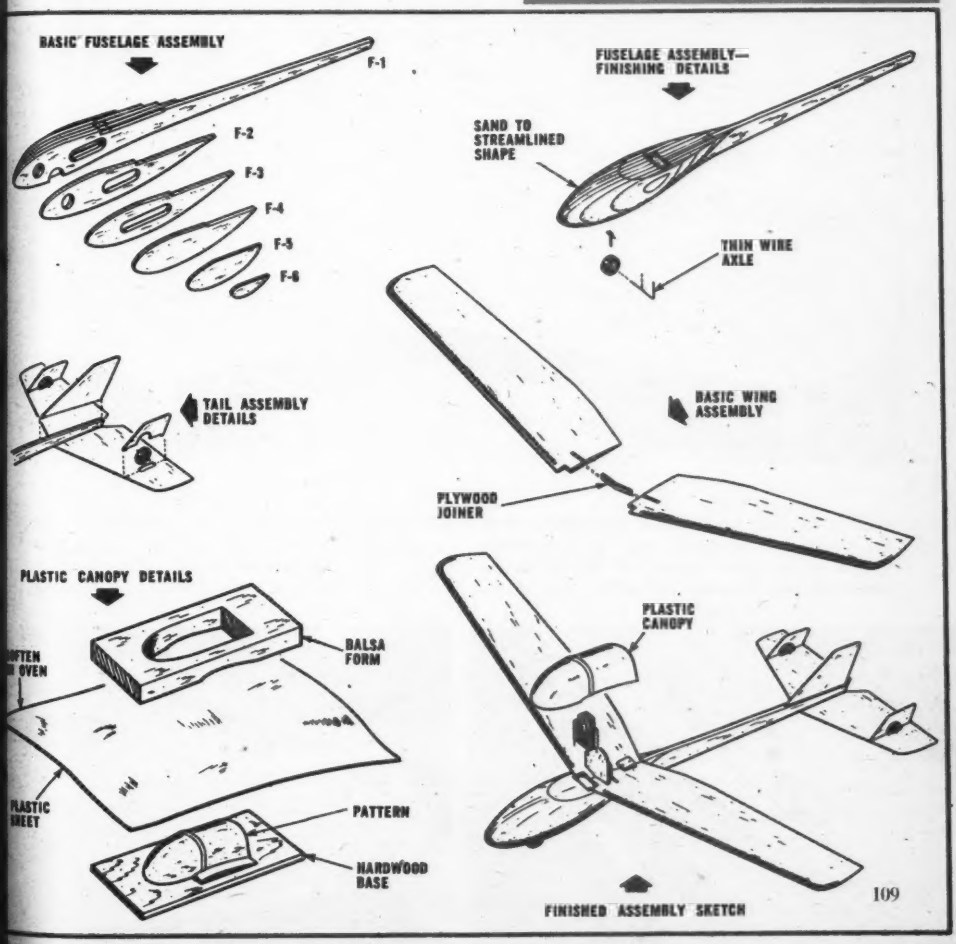
SPRING CLIPS should be adjusted to grip motor snugly.

LIGHT WICK with match, punk or other glowing object.

strictly for sport this cutout can be omitted. The tail assembly is now rounded on all edges, sanded smooth, then securely cemented in place. [*Continued on page* 147]

KIT AVAILABLE

MI's complete kit for Hotspur includes full-scale plans and Jetex motor. Send $2.00 for your kit to American Telasco Ltd., Box 177, Halesite, New York.

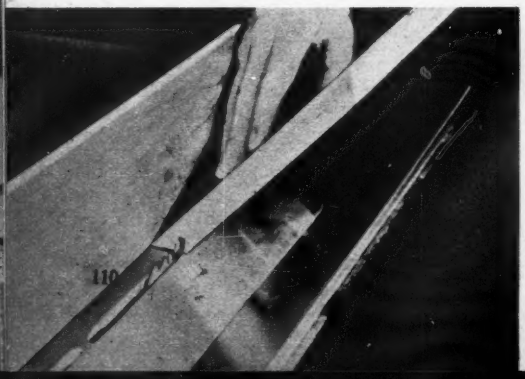


CORNER HI-FI CABINET

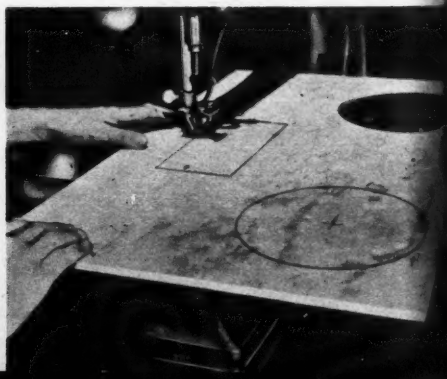
TO get the full range of audio enjoyment from your hi-fi equipment you need a well-designed cabinet to house the different units. In this attractive corner cabinet there is a place for everything, including an AM-FM radio, three-speed phonograph and a tape recorder.

The cabinet shown, which actually consists of two units,

MAKE SPLINE GROOVES for miter joints on circular saw with two ⅛-in. outside cutters of the dado head set. Wood facing prevents gap between rip fence and table.



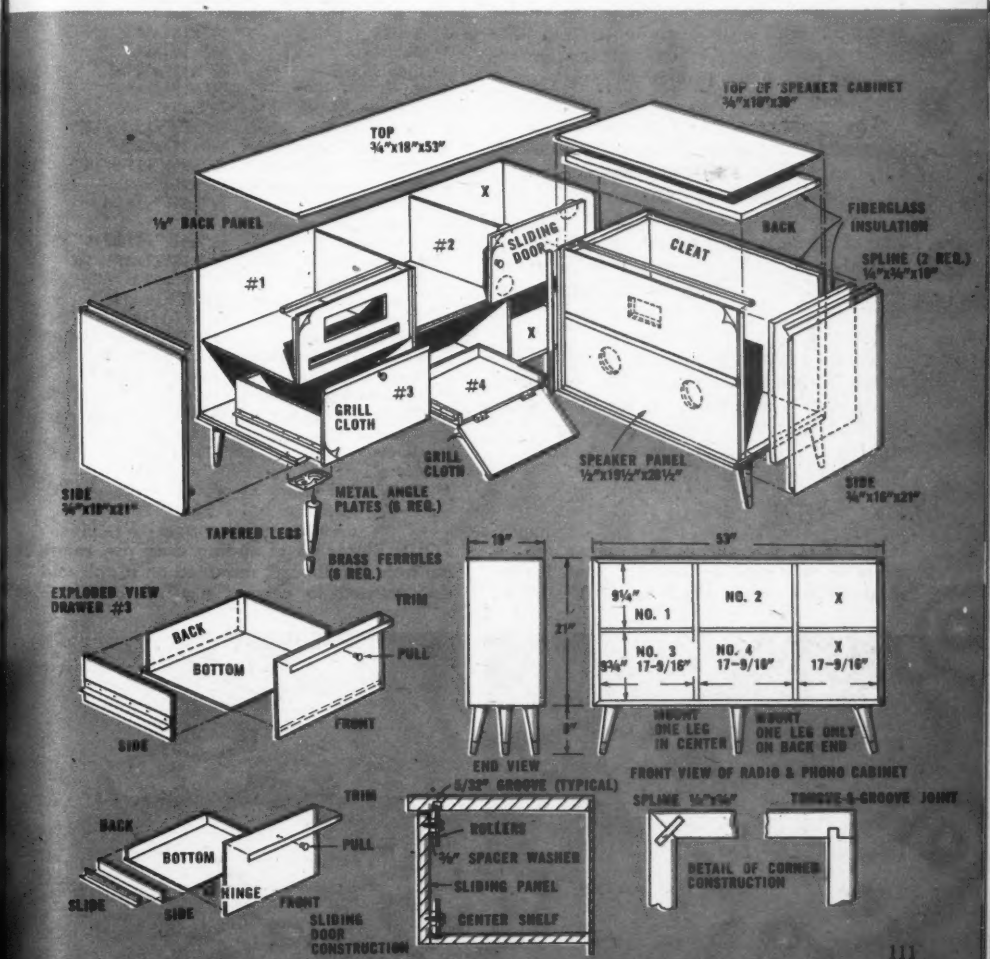
OPENINGS in front panel of speaker cabinet are cut on jig saw; bore ⅛-in. hole for a No. 92 jeweler's blade; for best results, run saw at high speed of 1725 rpm.

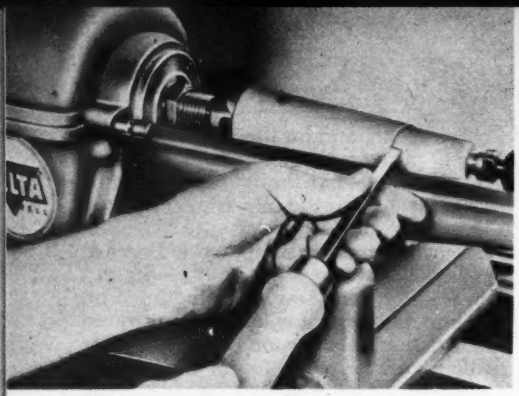


is made of white oak with a blond finish. The top, bottom and sides are made of ¾-in. solid stock but they can be made of hardwood plywood the same thickness or built up of half-inch thick fir plywood and quarter-inch oak facing plywood. The center and horizontal separators are a half-inch thick and all front edges are veneered with 1/28-in. oak or covered with Weldwood Flexible Wood-Trim. All front panels are ⅜-in. thick fir plywood, recessed ¾ in. from the front of the cabinet. They are covered with grill cloth of a neutral color with an interwoven gold thread.

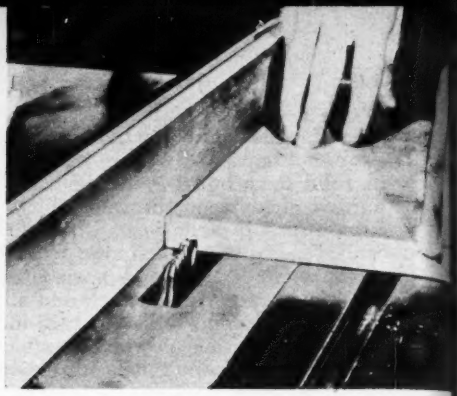
Metal roller glides are used on the No. 3 compartment, which houses the phonograph, and on the No. 4 compartment. The front door of compartment No. 4 is hinged at the bottom to permit easy access to the recorder controls. The door on compartment No. 2 is fitted with brass or tempered hardboard rollers. The disks are first rough cut on a jig or band saw, then mounted on a ⅜-in. bolt which is locked in a geared chuck for turning on a lathe. The roller groove in the top of the cabinet is 5/32-inch wide by half-inch deep and the one in the center shelf is the same width but only a quarter-inch deep. When installed, the door slides into the unused compartment marked X.

The panel on compartment No. 1 is





SIX TAPERED LEGS are turned down on a wood lathe: here, the lower end of one is shown being undercut for a brass ferrule.



TONGUE-AND-GROOVE joints are used at inside corners of both cabinets: grooves are cut with two ⅛-in. outside cutters.

permanently fastened to ¾x¾-in. cleats from the rear with one-inch, No. 8 flathead wood screws. The cutouts necessary for the instruments are made on a scroll saw with a No. 92 jeweler's blade.

The speaker cabinet is made of ¾-in. plywood with miter joints and splines on the right side and tongue-and-groove joints on the other. Openings for the speakers will have to be made to suit the size of those used. When they are completed, the two cabinets are fastened together with ¾x¾-inch hardwood cleats or metal corner brackets.

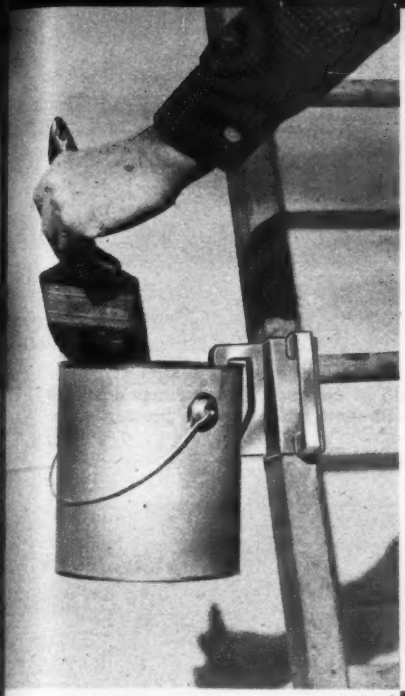
For a blond finish, first apply a commercial bleach. When the wood is dry, apply a filler with a white pigment. Then spray or brush on three or four coats of lacquer, rubbing with very fine steel wool between coats. A coat of wax completes the job. •

BILL OF MATERIALS

1	Top	¾"x18"x53"
1	Side	¾"x18"x21"
1	Side	¾"x18"x20½"
1	Bottom	¾"x17¾"x52½"
2	Separator Uprights	½"x17¾"x20"
2	Horizontal Separators	½"x17"x17-13/16"
1	Horizontal Separators	½"x17"x16¼"
1	Panel (Compartment 1)	½"x9¾"x17-9/16"
1	Panel (Compartment 2)	½"x9¼"x17½"
1	Sliding Door	½"x9¾"x18¼"
2	Panel (Compartments 3 and 4)	½"x9¾"x17-9/16"
1	Speaker Panel	½"x19½"x28½"
2	Drawer Sides	½"x6"x17-1/16"
1	Drawer Back	½"x6"x16-5/16"
1	Drawer Bottom	½"x17-1/16"x17-1/16"
1	Recorder Bottom	½"x17-9/16"x17-1/16"
2	Recorder Section Sides	½"x1"x17-1/16"
1	Brass Strip Trim	1/16"x⅜"x63⅜"
6	Tapered Legs	1½"x8"
4	Cleats	¾"x¾"x17-9/16"
4	Cleats	¾"x¾"x7¾"
2	Cleats	¾"x¾"x28½"
2	Cleats	¾"x¾"x18"
6	Brass Leg Ferrules	

TONGUE on side and bottom pieces can be made in two cuts on circular saw. Insure snug fit by trial-cutting on waste stock.

FOUR ROLLERS of sliding door are rough cut from hardboard, mounted on a bolt and then turned to correct size in the lathe.



FRESH PAINT TIPS

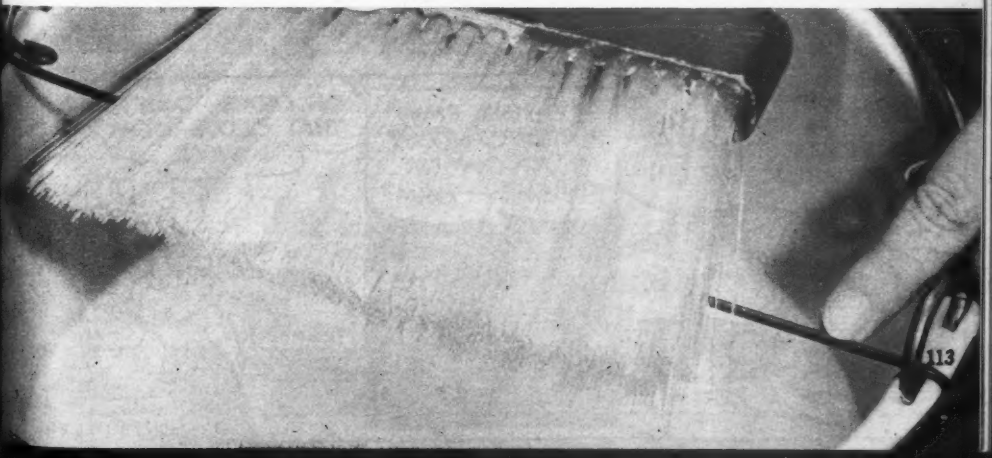
LOCK-ON, a new pail holder for painters, holds can at side of ladder in a vise-like grip.

Lockhart Mfg. Corp., Detroit, Mich.,

A KITCHEN FORK will do a better job than a paddle when mixing up paint in small cans.

SOLDERING GUN makes a handy tool for softening old putty preparatory to replacing glass.

WIRE BRACE across paste or paint bucket will keep brushes drained when they're not in use.



Home and Shop Shorts

STREAMERS of colored ribbon attached to hot air vents will show when furnace blower is on.

A CLEAR GLASS BLOCK in the basement wall can frame utility meters and eliminate need for meter readers to enter home.

STORM WINDOWS are easy to put up and take down when ordinary screen door handles are installed on the outside frames.

FREDDIE FUMBLES

PLASTIC PIPE will become more malleable if it is dipped in hot water for about 30 seconds. It is then easily connected to fittings.

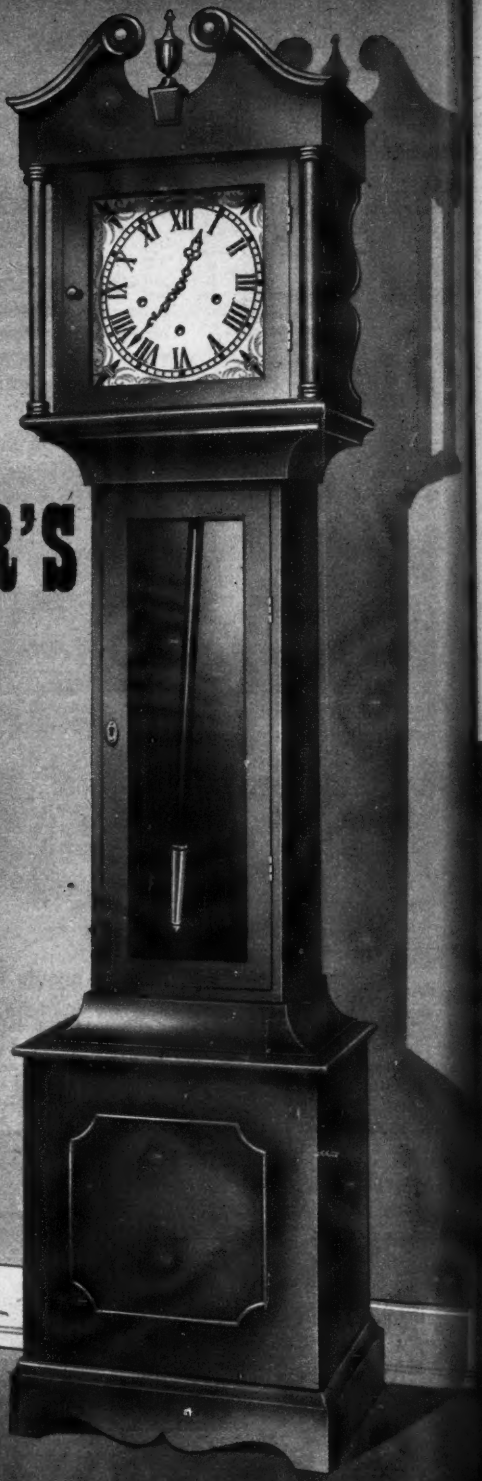
CUT V-SHAPED groove into top of hinge sleeve so that crown of hinge bolt is accessible to screwdriver when removing a door.

SMALL TRAVELING BAGS make handy carriers for a kit of small tools. Keep one in the car trunk so you'll be ready to handle those minor repair jobs that so often occur.

Send Freddie Fumbles your idea of a good short-cut, time-saver or safety device in your work, whether it be in the home, shop, office or farm. Each tip accepted will be paid for at the rate of $10. Naturally we cannot acknowledge or return the ones we cannot use. However all will be carefully read and evaluated. (Those which we can use in other departments of MI will be paid for at our regular rates.) Please send in your ideas on a post card only. Address to Freddie Fumbles, *Mechanix Illustrated*, 67 W. 44th St., New York 36, N. Y.

Build It...

A GRANDMOTHER'S CLOCK



By Pierre H. Boucheron, Jr

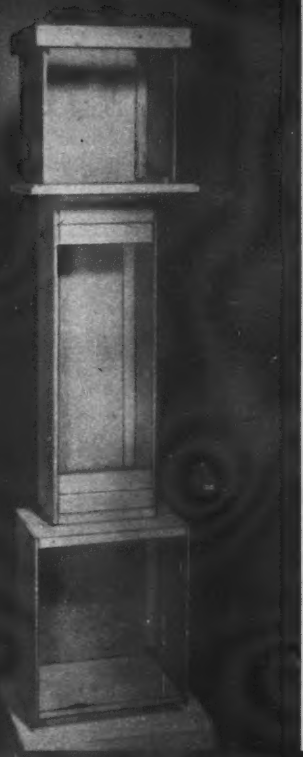
IF you have ever heard the majestic striking of the chimes on Big Ben or been fascinated by the rhythmic ticktock of an old-fashioned pendulum clock, then this chiming, diminutive version of a grandfather's clock should hold plenty of appeal for you.

This miniature stands 54½ inches high, has a long, slow-beat pendulum and requires winding only once a week. It incorporates full Westminster chimes which strike a four-note melody on the

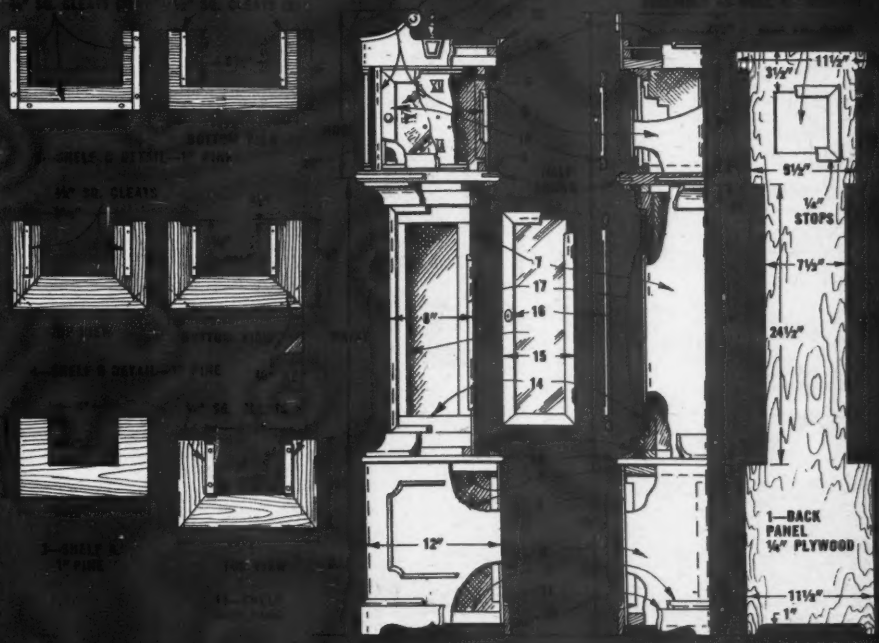
quarter-hour, eight notes on the half-hour, twelve on the three-quarter hour, and sixteen notes—plus the hour—on the hour. The major difference between a grandfather and grandmother clock is that the former is powered by weights while the latter is spring-driven. This permits a much shorter case on the grandmother clock to accommodate the mechanism.

Before proceeding you should appreciate that this is no weekend project. The time required to complete the clock will depend on how fast you work and you can expect the job to take up several weeks of part-time activity.

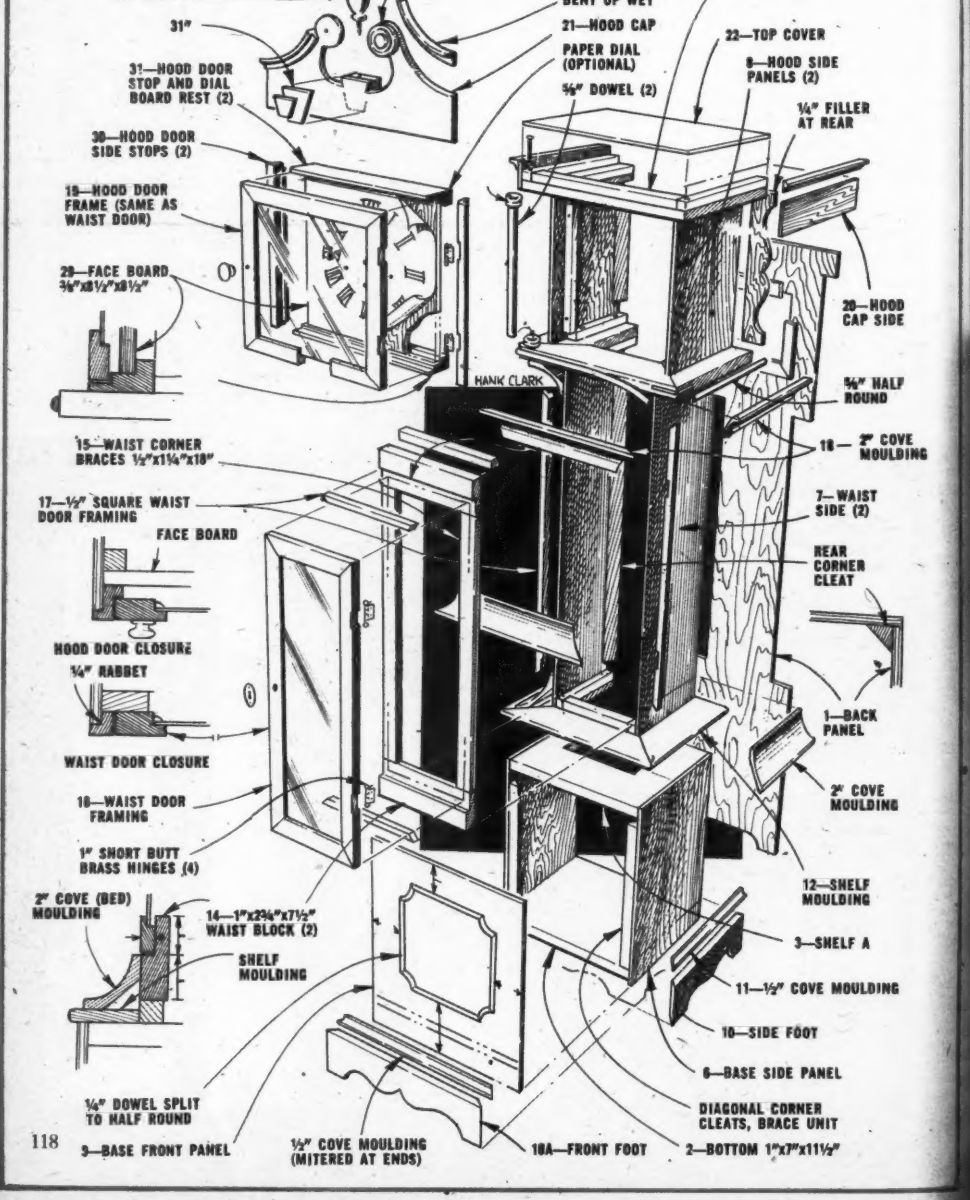
I suggest you select the clock movement before starting any construction. Make sure it will fit the case diagrammed in this article. Pay particular attention to the arc the pendulum will describe since it cannot exceed the width of the case. The original movement installed in this clock was pur-



FIRST STAGE of case assembly. Note triangular fillets reinforcing back corners.



chased from Ralph W. Holwick, 372 Dos Caminos Ave., Ventura, California, and is a "grandmother," spring-driven, eight-day, 4/4 Westminster chime on eight rods. The complete works include movement, chime rods, pendulum and hands. The clock mechanism is 5¼ inches square and 5½ inches deep. The pendulum describes a seven-inch arc and the distance from hand center to pendulum tip is 28 inches. With a little ingenuity the case will accommodate



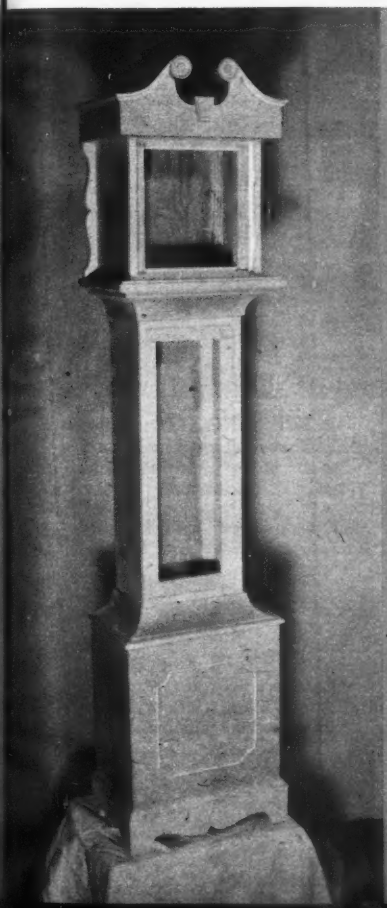
DIMINUTIVE size of grandmother clock is highlighted by this shot showing its proportions in comparison to other furniture.

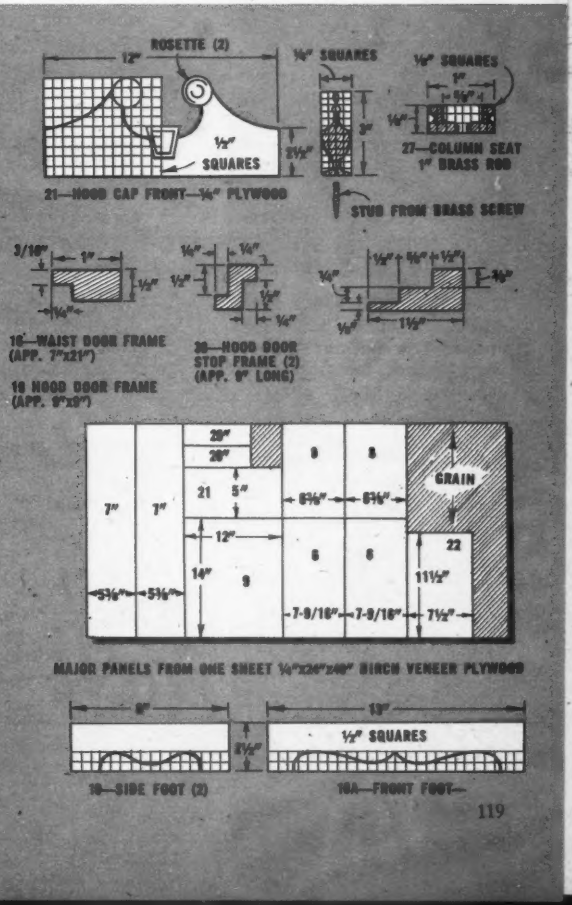
quite a range of movement sizes, but consider very seriously any changes in the basic dimensions lest you spoil the balanced proportions of the clock.

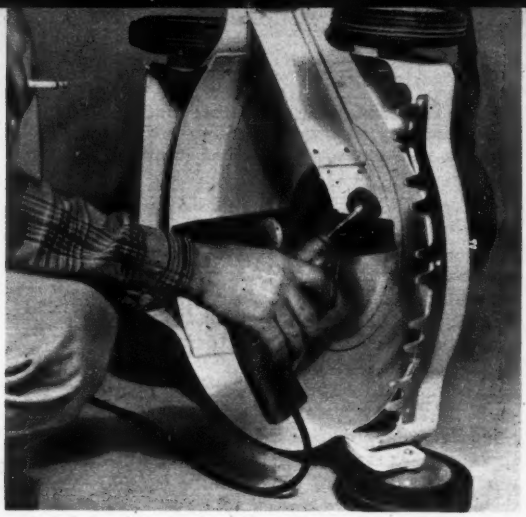
Before starting work, study the plans thoroughly. Familiarize yourself with the different parts and try to visualize the whole assembly.

Clocks of this type have three principal parts: the base, the waist, and the hood. In larger clocks these may be three separate pieces to facilitate transportation. But this clock, being small, was designed [*Continued on page* 132]

LATTER STAGE of assembly shows hinge mortises in hood and waist door frames; note the face mounting blocks in the hood.

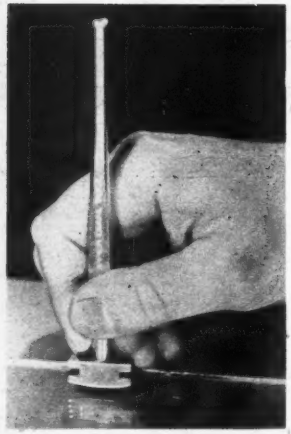






ATTACHMENT for ¼-in. drill is designed to sharpen rotary-type blades on lawn mower; cost, $2.98, ppd.

Mower-Mate Tool Co., P. O. Box 100, Riverton, Kansas

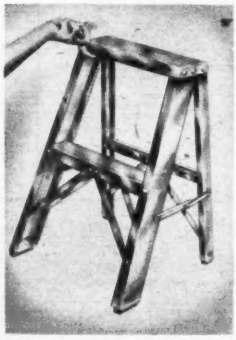


GLASS CUTTER with natural diamond set in aluminum handle can be drawn both ways rather than just one.

Clipper Diamond Tool Co.,
345 Hudson St., N. Y. 14

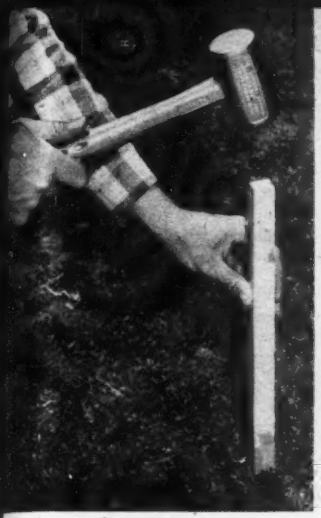
REFINISHING KIT contains remover, clear finish and a stain finish in either walnut, maple, mahogany or oak.

Jiff Chemical & Mfg. Co.,
5925 Highway Seven, Minneapolis 16, Minn.



STEPLADDER made of magnesium weighs 3 pounds, stands 2 feet high, has rubber feet, treads, will not corrode.

White Metal Rolling & Stamping Corp.,
443 Fourth Ave., N. Y. 16



HEFTY HAMMERS range from ½ to 5 pounds, come in two alloys for hard or soft metals.

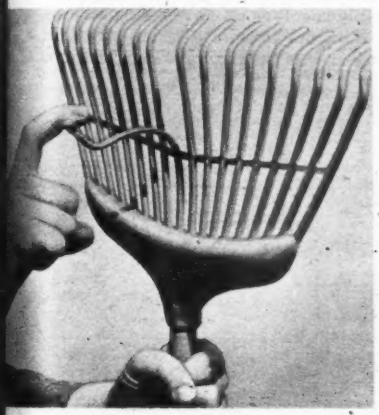
Hefty Hammer, Box 14, Painesville, Ohio

POCKET SIZE plier is only 6½ inches long, has a ⅞-inch maximum capacity; $2.30.

Champion DeArment Tool Co., Meadville, Pa.

CLIK-STOP adjustable wrench comes in 5 sizes, locks in position for nuts of different size.

Proto Tool Co., 2209 Santa Fe Ave., Los Angeles

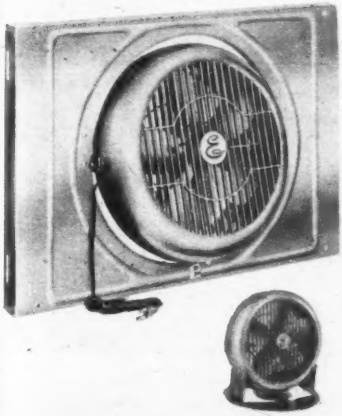


RAKE made of high impact plastic is flexible, weighs less than a pound, has 18 prongs.

Kent, Inc., 830 Monroe St., Hoboken, N. J.

TUBE CUTTER has ⅛- to ⅝-inch capacity, will cut plastic, copper, brass or aluminum.

Miller Mfg. Co., 251 W. Kellogg Blvd., St. Paul 2, Minn.



NAILS or screws fit into slot in driver, are directed straight by first hammer blow on tool.

T & M Supply Co., Box 231, Egg Harbor City, N. J.

TWO-IN-ONE fan can be used in the window or on stand supplied, is reversible; $10.95 ppd.

Jay Norris Co., 487 Broadway, N. Y. 13

Golden Hammer Award Winners

Each craftsman whose project is shown receives a 24-karat gold-plated Hammer and a Workbench Award Certificate. Runners-up will be sent a beautiful gold-plated Golden Hammer Tie Bar or MI's Certificate of Merit. How about sending us a *black-and-white* photo and *full* description of your latest project? Photos of you and your workshop are also eligible. Send all entries, with return postage enclosed, to MECHANIX ILLUSTRATED Golden Hammer Awards, 67 West 44th St., New York 36, N. Y. This month's Golden Hammer Winners have been selected from craftsmen who recently won top prizes in the nationwide Constantine Woodworking Awards Contest held to encourage woodworking hobbies.

GRANDFATHER CLOCK has cherry wood finial, mahogany columns, and stands 73 inches high. It was designed and built by Capt. Victor Goudey, USAF, Middletown, Pa.

ROTATING BAR, including intricate carving of a Japanese dragon, is representative of the fine craftsmanship of Mrs. Alicia R. Delvers of Kobe, Japan. The five-shelf center assembly revolves on pivots. The cabinet, of wood from the Japanese Judas tree and cherry wood, was finished in clear lacquer.

ABOVE. Pembroke table, by Dard Hunter of Chillicothe, Ohio, is of crotch African mahogany and striped satinwood veneers.

RIGHT. Harpsichord, designed and built by Howard Everngam, New York, N. Y., has stops for five different tone combinations.

The following craftsmen have been awarded GOLDEN HAMMER TIE BARS for their projects: Joseph Bucko, Bethlehem, Pa.; B. H. Knox, Baldwin Park, Calif.; E. V. Hildebrandt, Pittsburg, Kan.; Joseph Parkinson, Claymont, Del.; Noel Ryan, Montreal, Que., Can.; Bill Ralph, Castro Valley, Calif.; Bob Britton, St. Petersburg, Fla.; J. H. Brown, Arlington, Tex.; Jack Kleinschmidt, Sigourney, Iowa; Glenn Fortner, Decatur, Ill.; Nick Jaworovich, Union City, N. J.; Henry L. Sroczynski, Webster, Mass.; L. Pete Burinsky, Phoenix, Ariz.; D. J. Dickinson, Hawera, New Zealand; Ben Tarr, Oakmont, Pa.; George B. Armstrong, Bloomington, Ind.; Dick Watson, Austin, Minn.; H. C. Adlington, Rancho Cordova, Calif.; William H. Bauer, Manitoba, Can.; Jim Bevill, Chattanooga, Tenn.; L. G. Albright, Jr., Greensboro, N. C.; D. C. Wyatt, B. C., Can.; Virgil Swoyer, Phoenix, [Continued on page 146]

LEFT. Chippendale cupboard of cherry wood by H. Lloyd LeCompte, Jr., of Towson, Md.

CENTER. Cabinet with mahogany crotch veneer set off by tulipwood borders and inlays was constructed by Anthony M. Bosco of Everett Vocational High School, Everett, Mass.

RIGHT. Secretary, by Trimble Sharber, Nashville, Tenn., is a modification of an old Williamsburg piece. It was made of cherry wood—maple oil stained, lacquered and waxed.

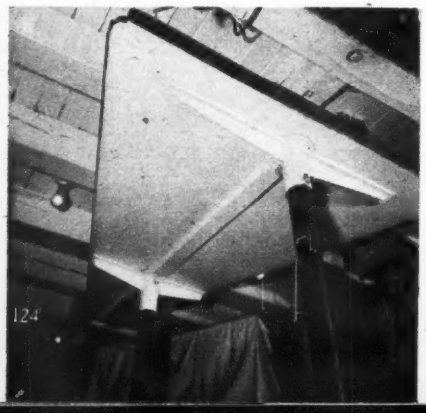
VANISHING MESS TABLE

DUE to a space problem in the forepeak shown at the left, the skipper of a fishing trawler installed a mess table that rides up and down on the deck support columns. In use, it is supported by a collar on each column. As an aid to raising it flush against the deck beams, or lowering it, counterweights ride within the columns. Each weight is secured to a cable which runs up and over a sheave at the top of the column and down to the table. So that accidental lowering will not occur when the boat heaves in a rough sea, one of the guide sleeves on the underside of the table is tapped for a butterfly setscrew which is tightened up on a column.

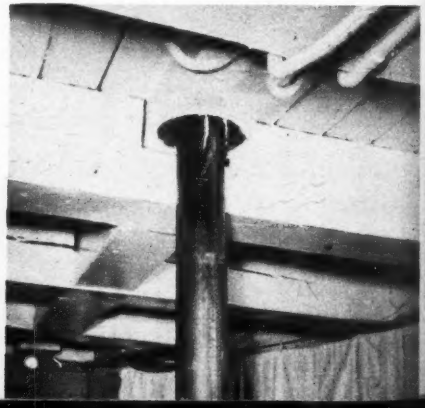
—*Mike Drucker*

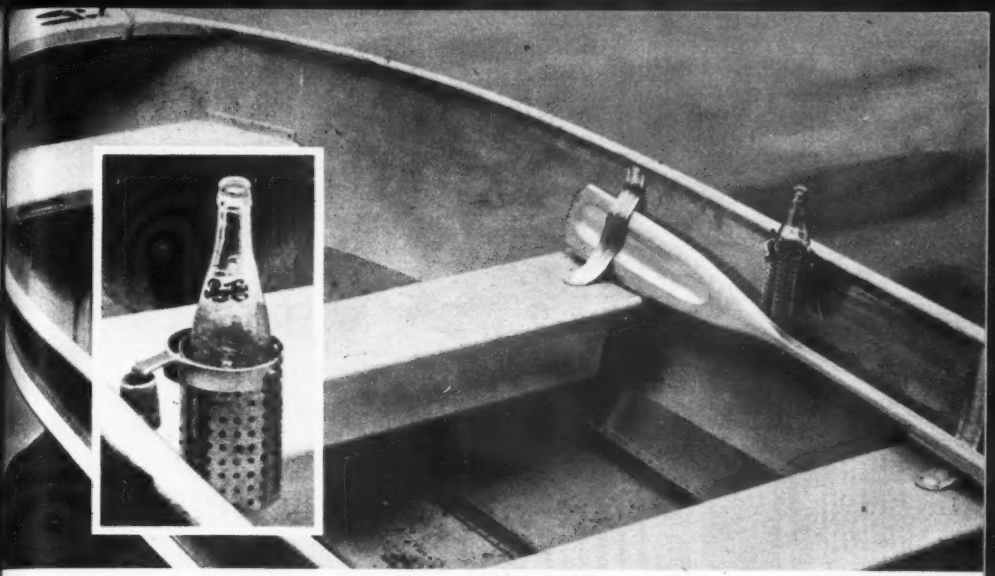
LOWERED, table is held at appropriate height by collars on columns; long sleeves attached to bottom steady it.

RAISED, it is out of the way. Butterfly setscrew in sleeve keeps it from dropping.



CABLE runs from table up over sheave at top of each column to counterweight inside.





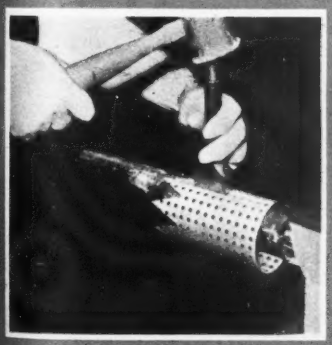
BEVERAGE BUTLER

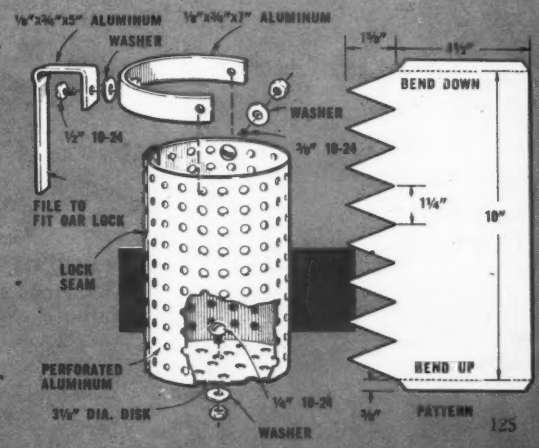
Wave action won't spill a drink set in this holder.

THE FOUR-WAY swivel action of this holder will keep a can, glass or bottle from spilling its contents when your boat rolls over the waves. Simply hook it into an oar lock or mount it in a convenient place with screws.

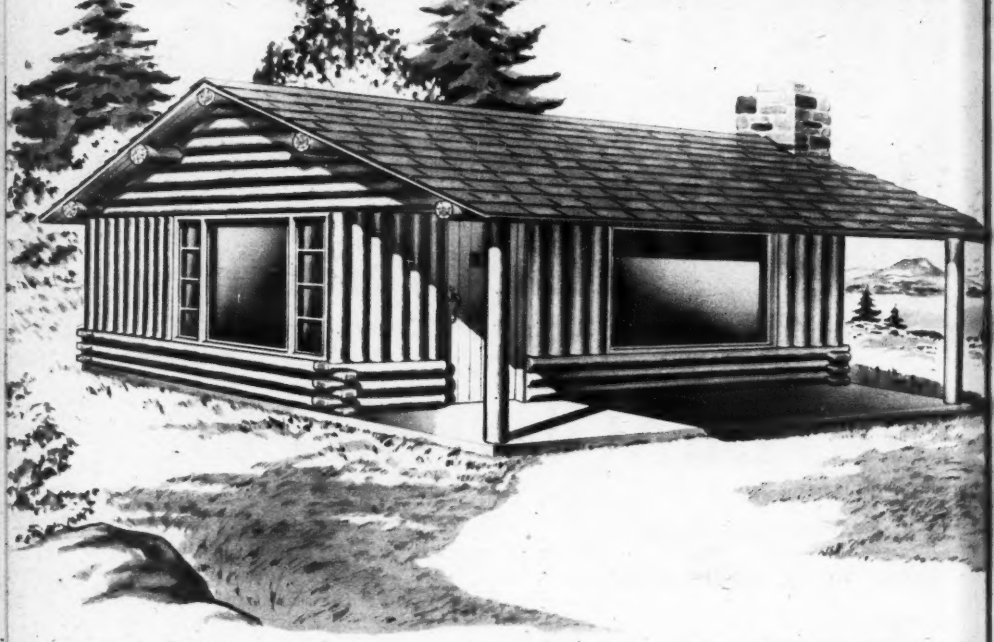
Transfer the pattern shown to a piece of perforated aluminum and cut it out. Then bend a ⅜-inch section up at one end and down at the other, roll the piece into a cylinder, close the seam and lock it. Next cut a disk for the bottom, insert it and bend the pointed tabs in. A small bolt and washer secures the tabs and disks. Add the bracket bent from solid aluminum stock and the job is done.—*C. Martin*

SEAM in the cylinder is closed and then locked as shown below.





LOG CABIN CONSTRUCTION



CHAIN SAW rips through base logs in a matter of minutes. These logs are then placed flat-side-down on the foundation; it is recommended that they be anchored with bolts.

BUILDING a log cabin today is not the laborious task it was for our pioneer forefathers. With the aid of a chain saw, such as the McCulloch MAC 35A on these pages, logs

Photos by McCulloch Motors Corporation

cutaway plan are not to be interpreted as exact dimensions or as a thorough exposition of the technique of cabin building, they do illustrate generally the procedure to be followed in erecting this cabin or one like it. With a bit of imagination and ingenuity any builder will be able to incorporate innovations of his own that will best meet his requirements.

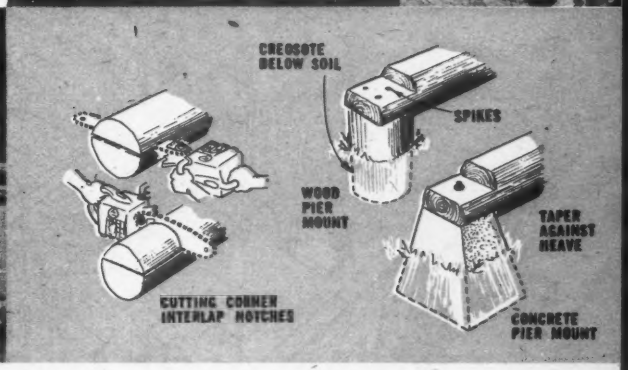
Special care should be taken in the facing and notching of the logs in order to insure a weatherproof fit. This is where the chain saw proves its worth.

It is recommended that the base logs be bolted to the concrete foundation. Remember, too, to bevel the top logs so that the hip roof will lie snug against them and make a tight

ROLL the next tier of logs onto the base logs, then rip to fit with your chain saw.

NOTCH each log at both ends, then position them temporarily to check their fit.

SPUN-GLASS INSULATION under bottom log will help seal out insects, dampness.



can be cut to size, notched and faced in a fraction of the time it took our ax-wielding ancestors.

While the accompanying pictures and

weather seal. Additional weatherproofing between all horizontal logs should include a coating of caulking compound. This will serve not only to seal the seams

CHAIN saw levels logs' humps. WINDOW frames are from 2x6's. VERTICAL logs are cut to match.

but will also act as a wood preservative. The outsides of the logs require nothing to protect them from the elements. In fact, weathering tends to beautify them.

And so now all that remains is for you to find that plot of land, take chain saw in hand, step out in the woods and build your *cabana grande.* •

END-TONGUE NOTCHES ARE CUT, TESTED AND FITTED

PLATE LOG IS BEVELLED TO SEAT ROOF BOARDS

2"x8" TONGUE-AND-GROOVE OR ¾" PLYWOOD ROOFING

4"x8" TIE BEAM WILL SUPPORT RIDGE LOG OR WALLS

NOTCH ROOF LOGS TO LOCK INTO END GABLE LOGS

FIREPLACE AND CHIMNEY COULD GO HERE LATER

ROCKWOOL UNDER SOLE HELPS KEEP OUT INSECTS

FOUNDATION MUST MEET LOCAL BUILDING CODES

MOST OF SIDE WALLS ARE OF VERTICAL LOGS

DOOR AND WINDOW FRAMES ARE 2x8's OR 2x8's

PARTITION HERE COULD FORM A SECOND GUEST BEDROOM

TILT SILLS TO SHED RAIN

TYPICAL LOG CABIN—16'x30'

These men chose before enlistment— so can you!

Pvt. Floyd E. Van Brieson
Brookings, South Dakota
Graduate, School of Agriculture

"I picked my own Army job training, and it was guaranteed for me *before* I enlisted. I chose a fine Diesel Repair course. My instructors were really good, and the training equipment was the best you could find. Now I'm an expert in diesels. I found only the Army offers a deal like this."

Pfc. Allen M. Voelz
Bouler, Wisconsin
Graduate, Bouler Union Free High school

"If you want an education, there's no plan like the one the Army offers graduates. I was surprised at how many courses are offered—practically everything. I chose the Guided Missile course I wanted—trained in an exciting new field. This guaranteed training is great. Why not find out about it?"

Seniors—get all the details on how high school graduates can choose their technical training before enlistment from 127 modern courses. Mail this coupon for your free booklet today. Or for immediate counseling visit your local Army Recruiter. He's listed in the phone book and will give you all the facts—at no obligation!

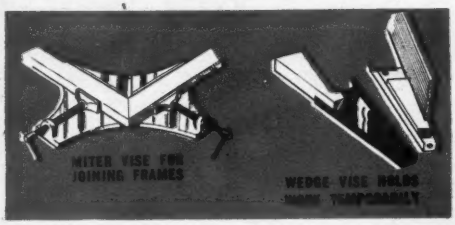
THE ADJUTANT GENERAL MI-9-58
Department of the Army
Washington 25, D.C.
Attn: AGSN

Please send me the free Army booklet telling how high school graduates can choose their technical training before enlistment in Modern Army Green.

Name.....
Address.....
City..... **State**.....
Date of Graduation.....

The Vise

[Continued from page 98]



Thus, work too wide to be gripped by the vise is gripped between vise stop and bench dog.

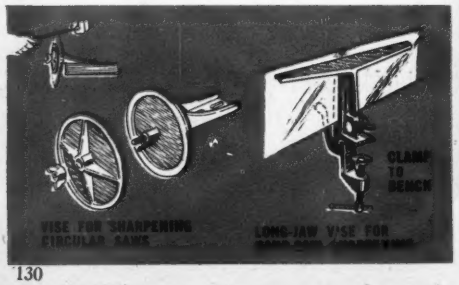
You may prefer a removable bench dog to the fixed-position type. This is T-shaped with a round leg to fit in a hole drilled in the bench top. A series of holes in line with the vise stop and about five inches apart are drilled from the front edge to the back edge of the bench. These permit the dog to be placed in any hole relative to the size of the work. Hardwood pads are used to protect the stock when it is gripped between dog and stop.

There is now available a portable woodworker's vise of the clamp-on type which can be carried from job to job. The L-shaped jaws have wood facings and are designed to hold work vertically as well as horizontally.

The machinist's (or metalworker's) vise is an all-steel tool mounted on a heavy base that attaches to the top of the workbench. These range in size (and price) from "miniatures" of the clamp-on type for model makers to affairs weighing as much as 200 pounds.

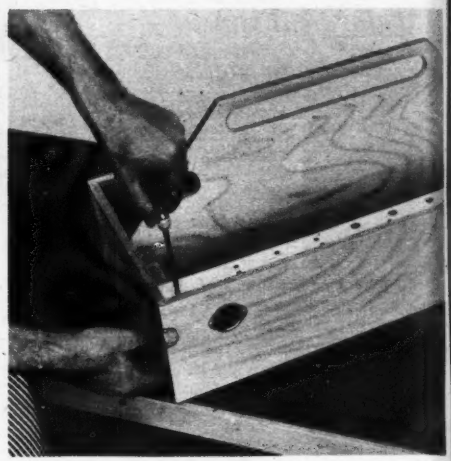
The common home workshop type usually has a four-inch jaw and bite and weighs from 10 to 30 pounds. There is a flat area immediately behind the slope of the stationary jaw which is used as an

[Continued on page 156]



Electrified Tote Box

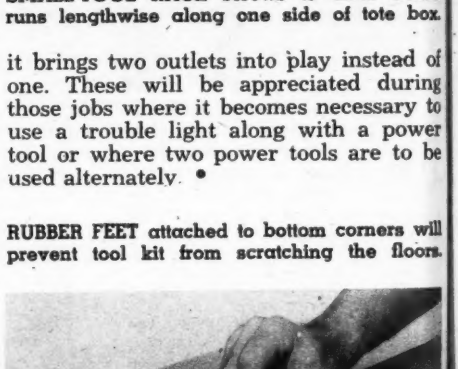
[Continued from page 102]



SMALL-TOOL RACK screws to cleat which runs lengthwise along one side of tote box.

it brings two outlets into play instead of one. These will be appreciated during those jobs where it becomes necessary to use a trouble light along with a power tool or where two power tools are to be used alternately. •

RUBBER FEET attached to bottom corners will prevent tool kit from scratching the floors.



You become a PRO the minute you use this versatile tool!

It's the Porter-Cable ROUTER!

Make all the perfect advanced cuts that the professional cabinetmakers and carpenters do—cut grooves, dadoes, mortises for door hinges, rabbet and other intricate joints, cut inlays and table top decorative joints and many other woodworking operations—all with precision and perfectly smooth edges. See it work—ask for a demonstration.

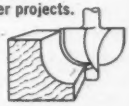
Model 162 Router ¼ h.p. $49.50

Model 100 Router ⅞ h.p. $57.50

STARTER BIT KIT!

Everything you need for grooving, decorative edging, rabbeting, etc. Straight bit, corner round bit, rabbeting bit and sharpening wheel packed in handy plastic case . . . $11.55 value—now $9.95.

Rabbeting Bit . . . for making rabbet or step cut for drawers, cupboard doors and other projects.



Corner Round Bit . . . for rounding off the edge of any flat wood surface.

Straight Bit . . . for stock removal, grooving, dadoing, inlay work and relief routing.

IT GROOVES, INLAYS, ROUNDS, CORNERS, MORTISES, EDGES . . . CUTS WOOD, METALS, PLASTICS, COMPOSITIONS

Write for free Router Folder A-1221

Contains complete description of routers, planes, bits, cutters and accessories

In Canada: write Porter-Cable, Ltd., Box 5019, London, Ontario. Canadian prices slightly higher.
In Mexico: CIA. General Distribuidora, S. A., Av. Oaxaca 50, Mexico City, D.F.

Porter-Cable
Quality Power Tools

Porter-Cable Machine Co.
8269 Marcellus St., Syracuse 4, N.Y.

A Grandmother's Clock

[*Continued from page* 119]

in one piece for strength and ease of construction. Also, one-piece construction results in a more rigid sounding board and hence a clearer chime tone.

Construction starts with the ⅜-inch plywood back (1). This door is necessary to start the hammers striking. The finished door will be fitted flush with the back, hinged on the outside and tightly latched with quarter-inch-thick molding fitted around the inside to keep dust out of the mechanism.

Now make the bottom (2) and glue it to the back one inch up from the bottom of the feet. Fasten the bottom to the back with 1¼-inch flathead wood screws turned through the back.

The shelf molding (12) is made in three pieces and mitered as shown in the plans. Assemble this to shelf A (3) before attaching the shelf to the back. Shelf A is made in one piece and fastened to the back in the same manner as the bottom, its top flush with the waist cut-in at the back.

Shelf B (4) is made in three pieces and mitered. Tack it temporarily to a piece of scrap to slit the corners 1½ inches deep and a quarter-inch wide. A one-quarter-inch-thick plywood or hardwood key is then glued into the slit. This insert is trimmed flush after the assembly has set and the edge then covered with molding mitered at the corners. Sand this shelf before attaching it to the back since it becomes quite inaccessible as assembly proceeds.

Shelf B is attached so that its bottom is flush with the top of the waist cut-in. Shelf C (5) is attached with its bottom 1½-inch down from the top of the back piece. The half-inch and ¾-inch square cleats will be used to secure the sides. These should be glued and nailed to the shelves as they are made. Next, the ¾-inch triangular reinforcers are made and fitted to the back between the shelves to provide additional gluing area and a stronger joint for the sides. These can be clearly seen in the picture of the first stage case assembly.

The side pieces (6), (7), and (8) are now cut from veneer plywood and glued to the back and shelves. The base sides (6) should be $\frac{3}{16}$-inch wider than the shelves so that the base front may be rabbeted in to cover the side edges with one thickness of the front plywood. Cut the base front to fit and sand smooth. Now lightly outline the trim molding in pencil. Trim pieces should be carefully fitted to the outlines and then glued in place before the front is added to the case. The ¾-inch triangular fillets are liberally spread with glue and placed inside the front corners through the hole in shelf A.

The front foot (10A) and the side feet (10) are now made, mitered at the corners, and fitted in place. The half-inch cove molding (11), also mitered at the corners, is placed on top of the foot boards.

The waist blocks (14) are placed at the top and bottom of the waist with their half-inch thicknesses toward the center of the waist and set in a quarter inch from the edge of the waist sides. Waist braces (15) are also set in to match with the waist blocks. Next come the sides, top and bottom of the waist door frame (17), which are mitered at the corners. The two-inch cove moldings (13) and (18), are mitered together at the top and bottom of the waist.

The hood door frame sides are put in place followed by the top and bottom pieces. Face mounting blocks are glued to the hood sides to line up with the thickest section of the top and bottom door frames.

The keystone trim and rosettes should be added to the front before it is fastened to the case. The special molding (23) for the hood cap must be handmade, especially the swan neck sections on the front. This is fairly easy to do on a router. Another possibility is to miter it together from several sections of half-inch cove molding (11). Addition of the top (22), top back filler and hood side fillers bring the case to its latter—and more recognizable—stage of assembly.

This clock was finished with a honey maple wiping stain carefully toned darker in the corners to simulate age. Hardwood can be substituted for the softwood used on the exterior of the clock case along with a matching veneer plywood.

Well, that's it. Have a good time building the clock and, more important, may you enjoy its presence in your home for many years to come. •

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New Weldwood Satinlac Lightener and new, improved Weldwood Satinlac give you easier, more lustrous natural wood finishes than ever before possible.

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- makes "invisible" protection possible, prevents the darkening or "wetting" look that usually occurs when conventional finishes are applied to virgin wood.
- preserves the color of freshly cut and sanded wood, and at the same time prepares the surface for subsequent luster-giving coats of Weldwood Satinlac.

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- brings out, preserves wood's natural beauty without the "built up" look of ordinary finishes; resists alcohol, water staining.
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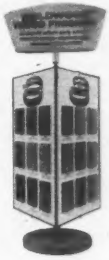

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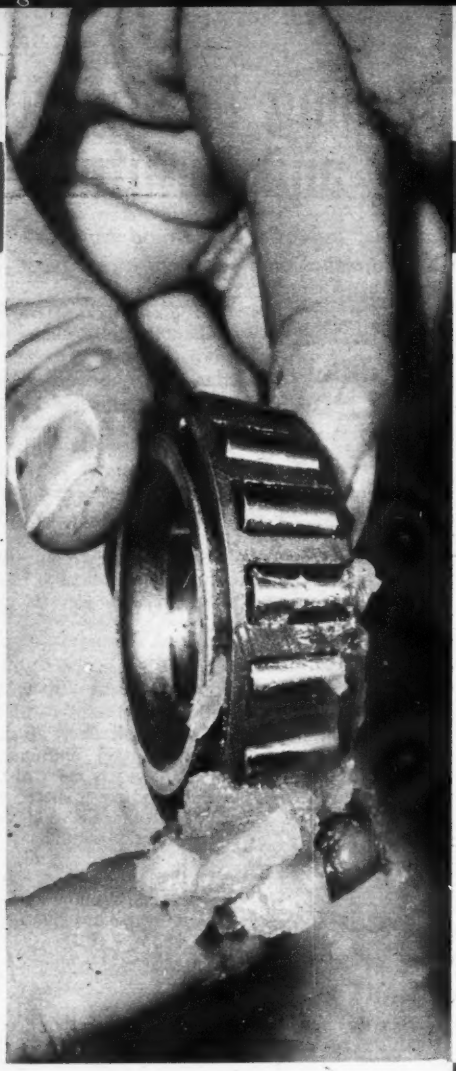

CAR CARE

FRONT WHEEL BEARINGS

By Frederick C. Russell
Member, Society of Automotive Engineers

AS no chain is stronger than its weakest link, so no wheel is better than its bearings. Long before the front wheels of your automobile let out a squeal to warn of the need for lubrication, the bearings can be causing a variety of troubles—some of them a threat to your security. The bearings in the rear wheels, however, are sealed and often last the life of the car.

Because front-wheel bearings are not considered in the thousand-mile

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DEFECTIVE BEARINGS can be detected by a crackling sound when the wheel is spun.

EXCESSIVE SHAKE may be due to loose bearings though there are other causes.

LOOSEN wheel nuts before jacking car or removing nut on steering knuckle spindle.

PRY OFF the grease cap to get at the nut at the end of the steering knuckle spindle.

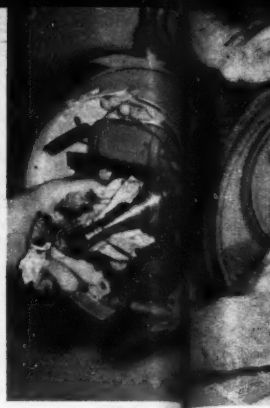
car lubrication, they are often overlooked until something happens. A driver can end up in a ditch because a wheel bearing overheats and breaks. Even though the affected wheel doesn't come off, the car can develop such a violent shimmy at 70 mph that he just isn't prepared to meet the challenge. Another serious mishap may occur because a wheel bearing is merely loose, not broken. This sort of thing causes too much play in the steering wheel. On the surface it doesn't seem much to worry about, but too much play is likely to cause the driver to go over-steer in trying to correct this condition. Overtight bearings can be just as much a hazard, being one of the leading causes of road weave or wandering. That is why it is so important to know how to adjust wheel bearings professionally. Even if you don't do the job yourself, you can be sure the mechanic entrusted with the work is on the ball. Nothing rolls like a car that has well-adjusted bearings. It even affects braking.

There's no general agreement as to how often front-wheel bearings should be lubricated. Many engineers believe that every 10,000 miles would be about right, but twice-a-year inspection is smart. This may not call for removal of the bearings, but it's possible that they need tightening. If they need more than a little taking up, probably there is reason for the abnormal looseness. Has the car been striking curbing? Was the wheel bearing lube the right kind in the first place? Were the wheels accurately adjusted when the bearings last received lubrication?

Years ago, lubrication of a car's front-wheel bearings was a simple thing. You just filled the little hub cap with fresh cup grease and screwed it back on. The old grease was automatically forced out the inner bearing around the wheel spindle. You wiped it off and the job was done. Not only were the bearings given new lubricant but they were fairly well cleaned in the bargain. But today we must remove the wheels to change the lube. In fact, we must be careful that the grease retainer is in good form; otherwise grease may get into the brake. Lube must be of the special fibrous type for the job or overheating might thin it out and encourage leakage into the brake. With the high heat of today's brakes, there can be no running risks.

Front-wheel bearings may be of the ball or roller type. On each front wheel there is an inner and an outer bearing, both serving to support the hub on the steering knuckle spindle. To get at these bearings, it is necessary to remove the wheel with the hub and drum assembly. Remember to loosen the wheel stud nuts before jacking the car. *Block the diagonally opposite wheel before setting the jack.*

With the wheel cover off, pry up the metal cap at the end of the spindle, thus uncovering the spindle nut which can be removed after withdrawing the long cotter pin which holds it in position. Next spread clean newspapers or a large clean cloth on the garage floor and be



LEFT TO RIGHT: Take care not to drop outer bearing when pulling the wheel from the spindle. Next, take out oil seal and remove inner bearing. Then wash bearing in gasoline or kerosene and clean the spindle.

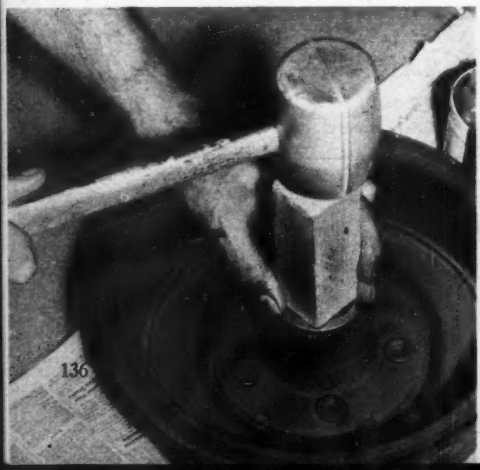
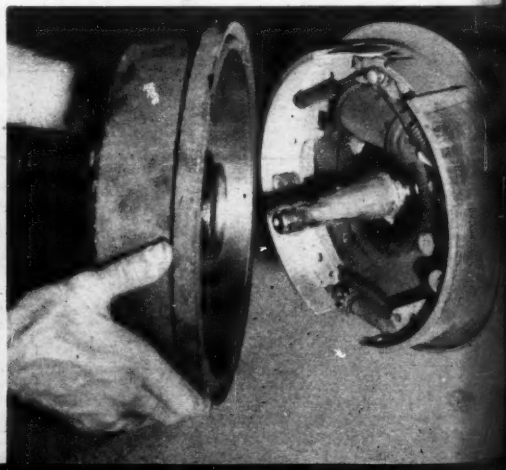
careful not to let the outer bearing fall to the ground when you start pulling off the wheel. The inner bearing will remain in position because it is held by the oil seal packing. Removing this packing will make it easy to take out the inner bearing.

There is a cup for each of the two bearings in each front wheel. A real inspection should include examination of these cups. Should anything abnormal appear after all the old grease is wiped from the hub and the spindle, the cups may need to be replaced. For this operation it is necessary to use a punch. Drive out the cups with special care. Start the new cup squarely into the hub so as to avoid possible distortion or cracking.

There is some difference in bearing types used for front wheels. For that reason it is well to have the car maker's specific instructions for the particular model. Don't be confused by the loose way in which the terms "cones" and "races" are used. A tapered roller bearing runs over a cone-type inner race. Races in front-wheel ball bearings are actually cones to permit adjustment. One 1958 car uses a dust seal at the inner end of the spindle and features a radio static collector at the outer end just inside the metal grease cap. Cones or complete bearings must be free to creep a bit on the spindle. The purpose of this

NEW OIL SEAL is usually required; drive it squarely so as to avoid any distortion.

AFTER CHECKING inner bearing and replacing oil seal, hub is put on spindle.

WHEN SPINDLE IS CLEAN, remove all old grease and grit from raceway in the hub.

GREASE the spindle and then work new lubricant into wheel hub and both bearings.

is to provide for a constantly changing load contact. The spindle should always be polished and bearing lube applied as a means of accelerating this creeping and preventing rust.

Right here put down as car care gospel the fact that you should never *add* grease to wheel bearings. If the supply is found to be short, or if it appears emulsified, the grease should be completely removed and replaced. This prevents forcing old grease into the inner bearing and possibly past the retainer. It also provides the opportunity to inspect bearings, cones and cups.

The experienced mechanic will wash all parts in a solvent such as unleaded gasoline or kerosene and thoroughly dry them off. It is necessary to dry them because wheel bearing lubricant won't adhere to oily surfaces. Also, only in drying the parts will he be able to decide for sure whether he has cleaned them thoroughly.

We watch him as he checks for flicking, crackling, "brinelling" or excessive heat. Those less technical about it would just settle for noting if parts show any wear, pitting or roughness. Note, too, how he packs the bearings without applying an excess of grease. Short-fiber wheel bearing grease is his selection for this job. On his car he adds 2½ ounces to the inner [*Continued on page* 146]

OVERTIGHTEN nut after outer bearing and washer are replaced; this seats bearings.

BACK OFF NUT just enough so that wheel will spin free without bearing looseness.

Monthly PHOTO Contest

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Address entries to: *Mechanix Illustrated*, Photo Contest, 67 W. 44th St., N.Y.C. 36.

1st Prize ($25) ....."PLEASE, GOD" Max Wyss, Massillon, Ohio, photographed praying soldier with 4x5 Burke and James set for f-5.6 at 1/25th; he used Ansco Ortho film, a No. 2 floodlight and table lamp.

$10 Award ....."SHE SAID THAT!" Birds in gossipy pose were caught by Cecil Hewison, Detroit. He had telephoto lens on an Exakta, made black-and-white from an Ektachrome transparency; f-8, 1/50th.

$10 Award .....SEA NYMPH Martin Koehler, River Grove, Ill., used a 4x5 Graphic, exposed Royal Pan at f-16 and 1/100th.

$10 Award .....OLD TIMER Using a 4x5 Graphic and Royal Ortho film, Weston Kemp, Rochester, N. Y., shot at f-32 and 1/100th.

Photography Today

By Robert Brightman

- *New miniature flashbulbs*
- *Non-reflecting glass*

SEE anything different in the pictures at the top of these two pages? Well, they are identical views of the same house. They were taken with the same camera, the same film, the same diaphragm opening, the same processing—but with two different flashbulbs. The shot at the left was exposed with a General Electric No. 5 flashbulb. It was an open flash shot with the diaphragm set at f-8. The figure in the background is about fifty feet from the camera. The film Royal Pan was developed in DK-50. A five-inch reflector backed up the bulb.

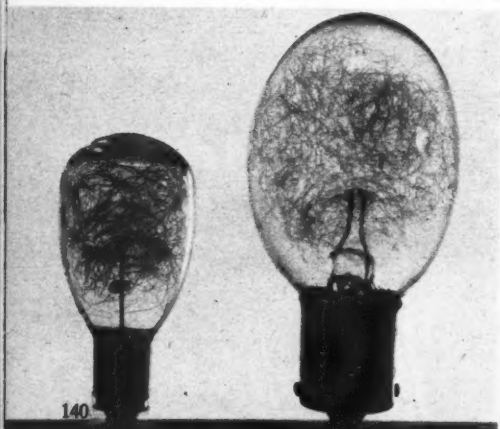
The identical picture at the right was taken under the same conditions but this time a GE M5 Power Mite flashbulb was used with a three-inch reflector. Note the identifying numbers inked in in the lower right-hand margin of each picture.

From a casual inspection it appears that both photographs are adequately illuminated. Indeed, it would take a discerning eye to tell that the shot at the right received slightly less illumination than the picture at the left. It's only apparent if you will inspect and compare the white stucco area of each house.

Two more pictures, identical to the above were also taken with Sylvania's Press 25 and M-5 lamps with results identical to those taken with the GE lamps. (It really flabbergasts us how two competing lamp manufacturers can come up with identical new developments at about the same time. The only way to explain it is that great minds run in same channels or are channeled!)

These new lamps are filled with zirconium and when used with a properly designed reflector, their effective light output closely matches that of No. 5 and 25 bulbs.

For the [*Continued on page* 157]



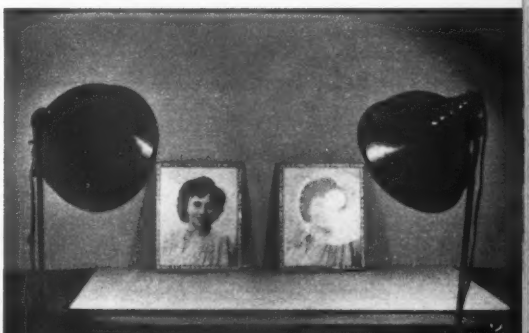
FULL-SIZE photos of standard No. 5 lamp and the new zirconium-filled midget bulb.

TWELVE LAMPS at left are equal in volume roughly to five of the old-style No. 5's.

AN ADAPTER permits the new lamps to be fired in reflector for large-base lamps.

BELOW: A specially designed three-inch reflector steps up efficiency of midget bulb.

TRU-SITE GLASS at left shows no reflection of lights. Conventional glass at the right.



EDITING HOME MOVIES

By Harold J. Highland

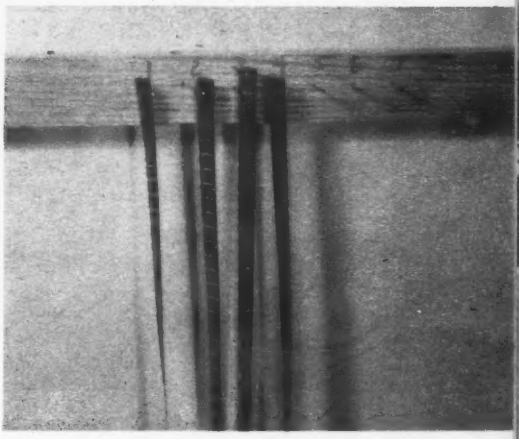
Got the guts to cut? Then guests won't squirm when you say, "Would you like to see my latest movies?"

HOW many home movies have you seen with dense and washed-out scenes popping up between good exposures—and all without continuity? Perhaps your own are like that. Pretty deadly, isn't it? What they need is editing—even if it means losing little Jimmie's cute expression that you can just make out in those dense frames.

For the movie maker, editing means cutting out poor sections resulting from faulty camera work, removing under- and over-exposed scenes, balancing long shots and close-ups with medium shots in order to obtain greatest interest, adding other details such as titles, fades or wipes and placing all in their proper sequence to tell the story.

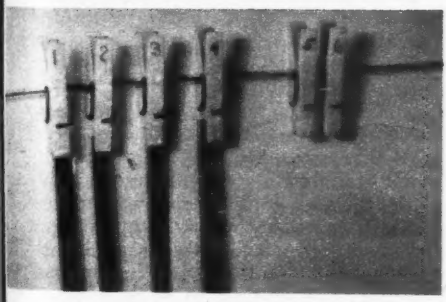
In order to edit home movies like an expert, you will need the following

EGG BOX is good for filing scenes in proper sequence. Number each one and keep notes.

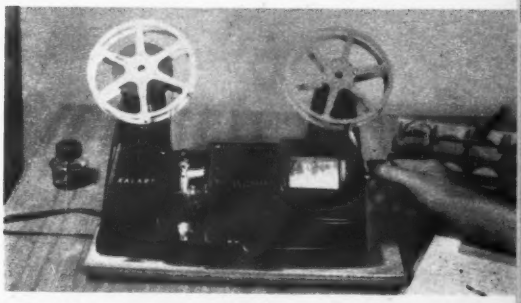


TACK BOARD will also serve to hold scenes. Secure 1x2 to wall and drive small brads in half-way; each fits through a sprocket hole.

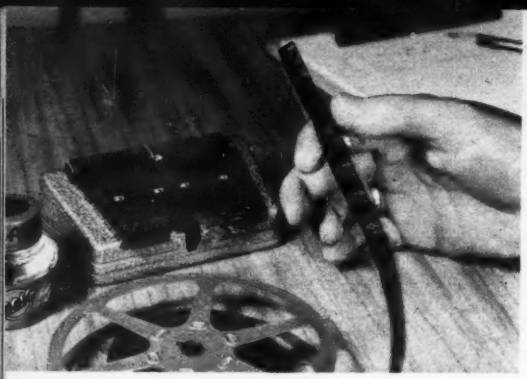
FILM STRIP at left shows long, medium and close-up shots. Most scenes should be taken at medium range for feeling of naturalness.



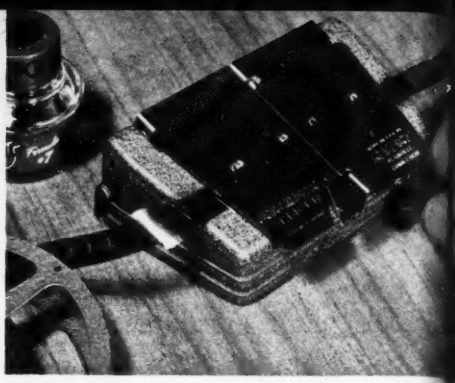
PROFESSIONALS hang their scenes from spring-type clothespins strung on a wire.



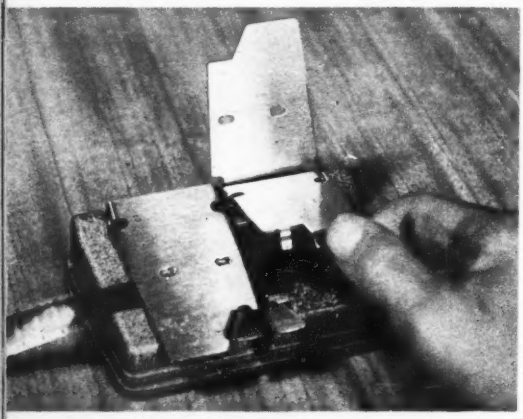
EDITOR-VIEWER allows you to run film both ways or stop at a single frame for splicing.



HOLD FILM by edges or, better still, wear cotton gloves to avoid smudges when editing.

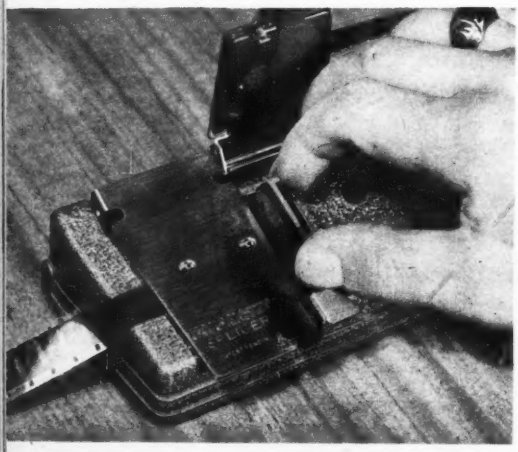


LAST STEP is to apply film cement to scraped portion, quickly lower plates.



FIRST STEP in splicing is to set film in left side of splicer, trim excess with right.

SECOND STEP is to remove emulsion, which faces up; use light pressure with scraper.



equipment: a film viewer, a splicer, film cement, film rewinds, white cotton gloves, some paper and a pencil. You can get the viewer and splicer as a combination unit with film rewinds.

Part of your editing job starts way before you sit down at the editor and splicer. It begins with the shooting of different scenes. To do an effective editing job you must have ample coverage of your subject. Not having enough footage will leave your movie incomplete and it is often impossible to go back and shoot more. On the other hand, having too much footage is easily eliminated by cutting the film. It's a good idea to shoot about five to eight seconds for each scene; the timing depends to some extent upon the type of scene shot—whether it be a long, medium or close-up view.

After the film is returned from processing, collect the various reels and sit down to edit. The first job is rough editing. Run the film through the viewer and study it carefully; run it slowly and turn back every now and then just to check on what is being shown. Make a note of scenes that might be over- or under-exposed, fogged or perforated where you shot too close to the beginning or end of the reel. Also note extra or uninteresting views that you thought were good when you took them but just do not fit in now. After you have run the film through your editor several times and become thoroughly familiar with it, you are ready for the final editing.

Start the reels all over again and write your editing notes on a small piece of paper or on some 3x5 index cards. Among the information you

FADES OR WIPES are made with Fotofade: time film is immersed determines darkness.

should note is a brief description of the scene and whether it is a long, medium or close-up shot. After you have made the various notes, put the reels back on the viewer and start to cut the different scenes into separate sections. As you cut each section, make a note indicating where the scene is filed.

There are three easy ways to file your film while editing: you can use an egg box and put each scene into a separate compartment, hang up a series of spring-type clips or drive small brads into a board. Each way is illustrated in the photographs.

A very important rule to follow is to balance your shots while editing. The object of editing is to make the viewer feel that he is there, taking part in the actual scenes and not just sitting in a chair watching. Most of our viewing of real life scenes is what the lens would see in a medium shot. Therefore, the majority of our scenes should be taken at medium range. On the other hand, some long shots or close-ups should be added to heighten the interest of the film. If the number of close-ups is too great, the audience will become too conscious of looking at scenes through a camera instead of actually "being there." Don't let any of the scenes run too long; make your point and move on. If you have any doubt about the length of the scene, it's better to cut it than to let it run too long.

While the same rules for movie editing apply to both color and black-and-white film, it has been noted that color sequences hold an audience's interest longer than black-and-white. Therefore, when editing a colored film, your scenes can be some- [*Continued on page* 147]

SIMPLE FADE is shown above at left: a center wipe is illustrated at right.

CROSS WIPES, below, accomplish the transition from one scene to another.

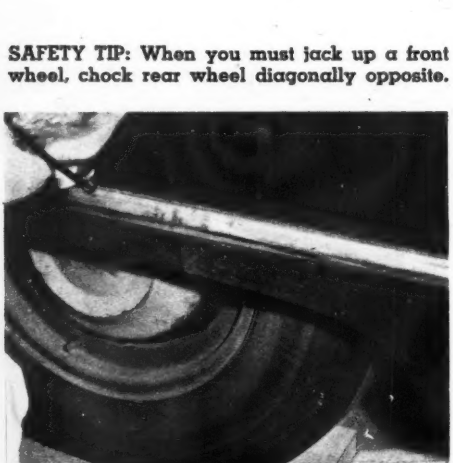
Front Wheel Bearings

[*Continued from page* 137]

surface of the hub. Another mechanic may use a bearing packer, but our friend gets along fine by hand. He carefully removes all excess grease, when sure that the bearings are going to be well protected, and puts a light coating of lube on the spindle. Some car makers think it is unnecessary to pack the hub, suggesting merely that a light coat of grease be applied to the inside surface to prevent rusting.

The inner bearing assembly should be placed in its cup with care taken to make sure that the new seal is squarely driven into the hub. This is the way to prevent distortion. In the case of a ball bearing, the inner bearing cone should be installed in the oil seal, not placed on the spindle; otherwise the seal would be damaged when putting on the wheel. When the wheel is replaced, the outer bearing is then set into position. Its cone comes next, then the safety washer and the spindle nut.

SAFETY TIP: When you must jack up a front wheel, chock rear wheel diagonally opposite.



Now for the actual adjusting of the bearings. First, the wheel must be properly and completely seated on the spindle. If a torque wrench is used, Cadillac suggests setting up the nut to about 16 foot-pounds to insure proper seating of all parts and make sure the threads are free. Then the nut is backed off and retightened to four foot-pounds. Buick suggests a simple way to obtain the same results without a special wrench. The nut is tightened until the bearings are preloaded at least one hex; then it is backed off until the bearing is slightly loose. Either plan helps make certain that the bearings are seated.

The final step is to retighten the spindle nut until all bearing looseness disappears. The nut is then lined up to the nearest cotter pin hole and the pin is slipped in. Now spin the wheel, remove the cotter pin and repeat the job of tightening. Sometimes as the grease works in it will change the picture enough to cause wheel looseness which, in turn, may cause noise that will be amplified by the car's front end. On a rough road a slightly loose bearing may sound like something broken or very loose in the steering system. •

Golden Hammer Awards

[*Continued from page* 123]

Ariz.; Earl G. Godfrey, Seattle, Wash.; Frederick F. Benedict, Ottumwa, Iowa; Tilman Lowery, Chesterfield, S. C.; J. M. Rhodes, Jr., Leesburg, Ga.; Loring L. Smith, Inkster, Mich.; Simon P. McGean, Nova Scotia, Can.; Robert M. Snyder, Wichita, Kan.; Reuben H. Horn, San Luis Obispo, Calif.; Ernest W. Pollman, Lake George, N. Y.; Paul J. Hancik, Keyport, N. J.; C. H. Flamboe, Detroit, Mich.; Ralph S. Bing, Cleveland, Ohio; R. J. Novak, Greeley, Col.; Jimm Schiltz, Luxembourg, Grand Duche; M. F. Plummer, Hollidaysburg, Pa.; Joe N. Ourique, Richmond, Calif.; Frank Horner, St. Paul, Minn.; Michael Briglia, Neptune City, N. J.; J. E. Askey, Sterling Run, Pa.; Brad Matthews, Ont., Can.; U. S. Anderson, Alberta, Can.; M/Sgt. N. K. Grossnickle, APO 285, New York, N. Y.; Walter Lyles, Jr., Murrysville, Pa.; Harry B. Smits, North Scituate, Mass.; Donald Rardin, Columbus, Ohio; Ronald F. Durlee, Akron, Ohio; Dan H. Woodard, Darien, Wis.

The following craftsmen have been awarded CERTIFICATES OF MERIT for their projects:

Chas. G. Jacoby, Helena, Mont.; David Harris, Woodbury, Ga.; James R. Keith, Wichita, Kan.; D. B. Schafer, Cape Town, S. Africa; Richard G. Robinson, Columbus, Ohio; David Jasinski, Utica, N. Y.; Edward P. Day, Pittsburgh, Pa.; Lloyd E. Hight, Hemet, Calif. Watch for names of more winners next month.

Hotspur

[*Continued from page* 109]

The wing, too, can be cemented to the top of the fuselage at this time; the top of the fuselage at the wing position is recessed to the same angle as the wing center.

The canopy is made from a hardwood pattern to which several coats of clear lacquer have been applied. A piece of .020-inch acetate (about eight inches square) is then oven heated at about 300°. Meanwhile, from a thick sheet of balsa cut out the top outline shape of the canopy from its center. When pliable, remove the acetate sheet from the oven and place it over the canopy pattern. Press the balsa over the acetate sheet and pull the acetate down over the sides of the pattern until the correct form has been obtained. Let cool, then remove from the pattern and trim away any excess.

Ready to fly. Test glide the model by launching it from your hand in a gentle sweeping motion. Warp the tail up or down until a shallow descending glide is achieved.

Before power flights are attempted put a shallow turn in the glide. Using V-Max "50" fuel for power, begin test flying with only one fuel pellet to ascertain necessary adjustments. Once the model is trimmed you can begin using two fuel pellets. •

Tool Bar

[*Continued from page* 101]

cabinet with angle irons to hold screwdrivers and nut drivers.

The doors are lacquered on *each* side to prevent warping. They run and bypass each other in two grooves dadoed at the top and bottom of the cabinet. Note that the upper dado is deeper than the lower one. This is necessary so that each door can be "lifted" into place.

The method of attaching the cabinet to the cellar ceiling joists is plainly shown in the photographs. When lining up the strap iron supports, make certain that they are on the *same* side of the beams. This way slight shifting is possible. This method of fastening, plus the supporting strap at the bottom is an easy and practical way of hanging heavy equipment against a cellar wall. •

Editing Home Movies

[*Continued from page* 145]

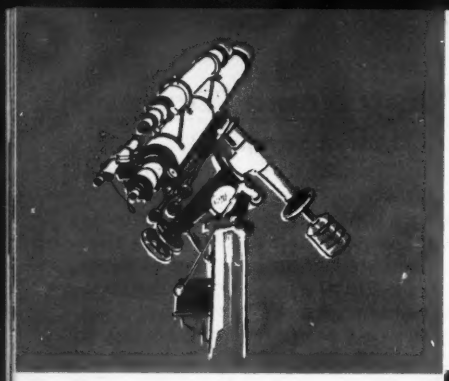
what longer than those for black-and-white.

Smoother continuity results in dramatic or exciting sequences if a different camera angle or a change from long shot to medium shot is cut in at a point where the focus of interest changes. For example, a sequence showing a boy teaching his dog to catch a ball might start with a long shot including both of them in the scene, with the boy in the foreground. He tosses the ball high into the air; then a medium shot shows the dog leaping for the ball. These scenes would be cut at a point where the ball is in the air, because it is then that the interest shifts to the dog and his efforts to catch the ball. The extra frame in each scene upon which to make such a cut is easily pin-pointed by using a viewer.

Switching from one scene to another can be accomplished in several different ways. As in the case just mentioned with the boy and the dog, the mere shifting of the point of interest is sufficient. However, when you move from one scene to another, such as from the boy and dog playing to a shot of the family at the beach, there are different techniques you can use to shift smoothly.

Moviemakers use a cross-dissolve to shift from one scene to another. This is a situation where one scene comes into the film while the other is dropping out. It is not possible for the home moviemaker to do this unless he has shot extra film and has special processing equipment.

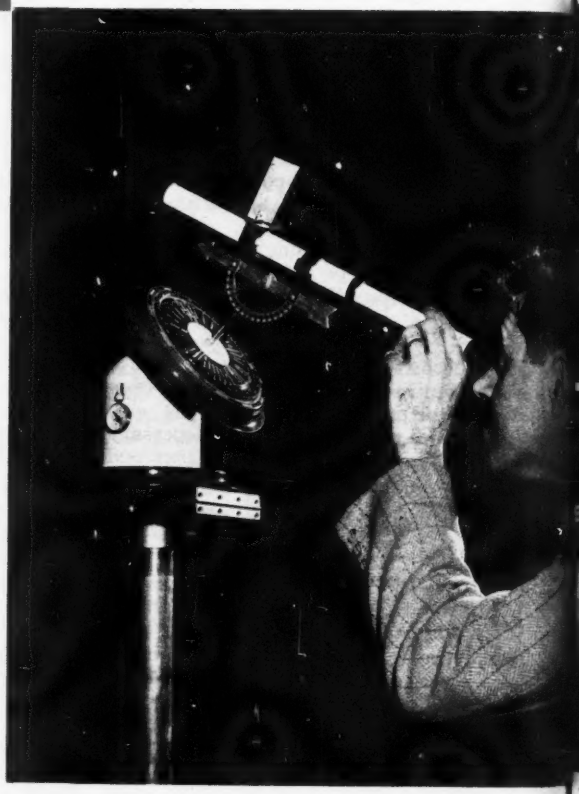
A special chemical dye, such as Craig Fotofade, enables the home movie editor to make cross wipes, side wipes, center wipes and fades. A fade is the cinematic effect in which a scene starts with a perfectly black frame and subsequent frames become lighter and lighter until the norm is reached in a fade-in. Fades are often used as transitions, denoting a change of time or change of locale. A fade-out is the progressive darkening of the film so that the scene disappears from the screen. Except at the end of a film, a fade-out should not be used unless a fade-in is used immediately thereafter, for this inconsistency is distracting to an audience. Fades should not be used too frequently or their impact and novelty will be lost. •

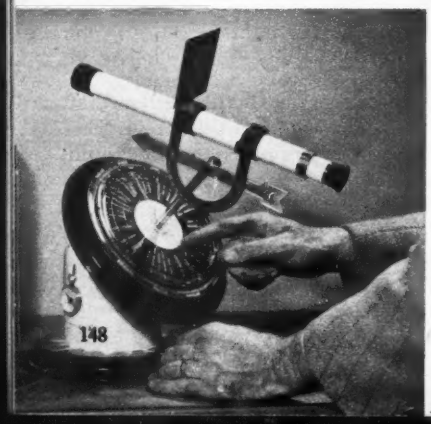


THE AMATEUR TELESCOPE MAKER'S PAGE

"THE heavens declare the glory of God," says the Bible and by jingo, ever so many manufacturers are jumping on the bandwagon to prove the point and at the same time bring the heavens down to earth, especially so since Sputniks, Vanguards and Explorers have started to race around the skies. We present this month a round-up of astronomical novelties that have been designed to encourage interest in this most awesome of sciences.

Sky View Observatory. This is a stamped sheet metal miniature observation station measuring about 10x10 inches and features a small telescope to observe the skies. To use this instrument it is mounted on a flat surface, such as a table or the top of a stepladder, and oriented so that the "observatory" points due North. A small compass, part of the outfit, helps deter-

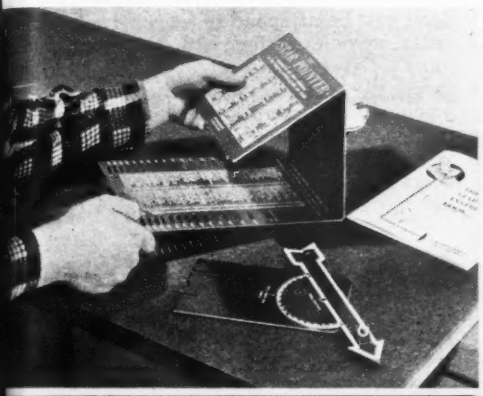


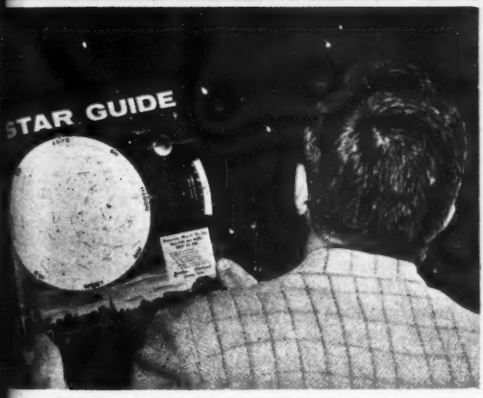


MINIATURE OBSERVATORY made by Bellevue Mfg. Co. of Bellevue, Ohio, uses a 20x telescope to spot the constellations. Platform is first set to point North. Next a pointer is moved to coincide with the constellation sought. Telescope is moved up or down according to value given next to name of constellation. Sighting along the arrow or through telescope locates the sought for star or constellation.

mine North. The next step is to rotate a movable dial to coincide with the time and the day of month in which the observation is taking place. For example if you are planning to make an observation at 10 p.m. on September 15, a time dial is moved so that it lines up with the date September 15th on the non-movable background. The next step is to select the constellation to be observed. Thirty-three constellations are listed, together with their declination. (*Declination* is the astronomer's term for latitude and *right ascension* is the term for longitude.)

To locate a particular constellation the pointer is moved until it rests over the name of the [*Continued on page* 166]



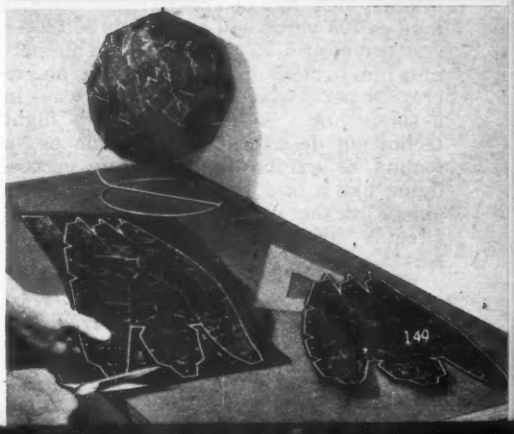


STAR POINTER, top two photos, is made of heavy cardboard and is adjustable to the observer's latitude from 26° to 54° North.

STAR GUIDE, above, consists of a rotating disk which presents the constellation in the sky according to the day of month.

MURAL of the moon is one of a series of large size celestial photos suitable for wall decoration. This one measures 24x36 inches.

SKY MASTER is a globe of the heavens in kit form. Gores are cut as shown and then pasted up to make the sphere in background.



Grasshopper Infantry

[*Continued from page* 65]

rocks and bushes at racehorse speed and disappear into the high grass along the river bank. Another squad and then another joins them as the bug-eyed enemy stare in amazement. Are these hurtling figures actually men? Surely no human beings can move that fast! Before the bewildered foe can make up their minds, the GI squads move again. With ear-splitting roars, they erupt like coveys of giant partridges, spanning the stream in gargantuan leaps. Through the criss-crossed veil of flame and smoke their automatic rifles spew a deadly hail into the defenders' foxholes. Under cover of the flying rush, assault jeeps bump across the clearing and splash down into the stream. The noise is intensified as their drivers switch on rocket boosters and the vehicles skim across the water on wide water skiis. Appalled at the speed of the attack and confused by the sudden pandemonium of noise and smoke, the enemy rear guard breaks and runs. Another advance has been gained by our fast-moving Grasshopper Infantry.

Patented by Alexander H. Bohr, Reaction Motors engineer, the rocket-propelled Jump Belt turns the plodding foot soldier into a human cannonball. Cheaper and more compact than one-man helicopters, the device overcomes the pull of gravity and provides short bursts of fantastic forward speed. Switching on his back-mounted rocket, the heavily laden soldier can run as fast as a racehorse, leap streams and sail over barbed wire and mine fields in kangaroo-like strides. Cliffs, walls and rocky hillsides are scaled in giant bounds, with the soldiers arriving at the top untired and full of fight. Equipped with an improved Jump Belt, the average infantryman may be able to make leaps as long as 100 yards and as high as 20 feet—and travel at a 35-mph speed! This permits him to clear ordinary obstacles and to cross 90 per cent of Europe's waterways in a single hop. A Reaction Motors flight technician describes the sensation as "a feeling of exhilarating weightlessness—flying like a bird." Another, the top engineer of the project, said the physical effect is "like riding your own high-speed elevator."

While still in the experimental stage, the Jump Belt has aroused strong Army interest and a security lid has been clamped down on its details. The device is reported to strap on with a parachute-type harness and weigh no more than an infantry pack. In the MI version shown here, a number of rocket cartridges are carried in a revolver-like arrangement. This permits a series of successive jumps without reloading. A hand lever rotates the cylinder for each shot. According to Reaction Motors spokesmen, larger rocket units can be attached to jeeps, trucks and other vehicles fitted with enclosed bottoms. Driven down river banks at high speed, the rockets are switched on and the machine skims across the water on a steel surf board mounted between the wheels. When perfected, this unique powerplant will add another boost for our Army's new, fast moving Pentomic Divisions. •

10 Things About Women

[*Continued from page* 83]

and a lot of things start becoming very clear. It explains, for example, why you are entranced by the latest lawn mowing gadget while she throws it a cursory look and concentrates on her flowers. The machine is a *thing* but the flowers *live*. It explains why she gossips about marriage and divorce, revels in love stories on TV and in the movies, talks endlessly about babies. These represent life and people.

Now a logical follow-through of this interest in people, points out Dr. Judson T. Landis of the University of California, is that women take things a lot more personally than men. That is, everything she hears or sees she applies at once to herself. Want to try an experiment? Ask a man: "Say, where did you get that suit you're wearing?" Chances are 100 to one he'll tell you the name of the store. But ask the same question of a woman about the dress she has on. She'll reply: "Do you like it?" or "Why, what's wrong with it?"—or some version of same.

6. *Women can sit still longer than men.*

Ever wonder why a woman wants to attend lectures and concerts so much more often than a man? Maybe you thought it was because the girls are more culturally inclined. Not so, says science. It's simply because her bodily build permits her to be

vastly more comfortable in straight-backed chairs and for longer periods of time!

A woman, you see, has her weight centered around the hips, thus she can ease into those lecture hall chairs and anchor there. On the other hand, a man is generally heaviest around the shoulders and upper arms, thus he's extremely unhappy in a chair which does not support his shoulders.

7. A woman's liver ages faster than a man's.

Store away this nugget of knowledge—it may come in handy at a cocktail party if the conversation lags! Dr. C. Ward Crampton, world-famed geriatrician, reports that the female liver is much more apt to wear down than the male. Women, he says, are more subject to liver enlargement, more prone to chronic hepatitis and get more diseases of the gall bladder, the organ which rests in the liver bed.

You've known that women are less subject to heart attacks than men but these physiological facts will doubtless surprise you:

Women have larger and more active thyroid glands, thus accounting for their abundance of pep and enthusiasm. However, they tire more easily than men for three reasons: 1. Their blood contains up to 20 per cent fewer red corpuscles and has a higher water content; 2. Their hearts beat eight to ten times more per minute, resulting in diminished endurance; 3. Their lungs, smaller in size, are unable to take in large enough quantities of oxygen, requiring them to rest more often. Women develop foot ailments fully 15 times as much as men. Their jaws can exert only about one-third the biting pressure of men. And their hands can exert only a 48-pound squeeze compared to 81 pounds for men.

8. Women grow faster than men.

It's common knowledge that a girl matures more rapidly than a boy but scientists are discovering some fascinating facts about how early this difference in growth starts. Actually, from infancy on, every part of the body from toe to top of head develops more rapidly in females.

In girl babies, the first joint of the toe turns from cartilege into bone at approximately 14 months of age, a full half year earlier than it does in boy babies. A boy's kneecap does not ossify until he's about three years old but in girls it becomes bone at the age of two. A girl's shin bone hardens at nine, two years before a boy's. Although there's almost no difference in the emergence of baby teeth, the permanent ones come out an average of six months sooner in girls than in boys.

9. Women are not more emotional than men.

Down through the years has come the belief that women constitute the emotional sex, men the restrained one. But scientific evidence explodes this as a myth. Here is why it's impossible to say which sex is the more emotional:

Male suicides outnumber female by three to one, according to Metropolitan Life Insurance Co. statistics, but women *attempt* suicide far more often than men.

Women have more mental crackups than men, the National Association of Mental Health was told recently by Dr. George S. Stevenson who reported on a 40-year comparative study. But medical statistics consistently show that stomach ulcers, in which tensions and anxiety are important contributing causes, are ten times more frequent in men than in women.

Women have a greater tendency to blow up, to become moody and to get excited, a California sociologist discovered after he gave a personality inventory test to a large mixed group. But the British Library of Information reporting the results of a study after World War II, said that women responded to bombardment with much less emotional shock, hysteria and neurosis than men. Said the official British bulletin, quoting medical writer Frank D. Long: "It may be true that women are more emotional than men in romance but they are less so in air raids. . . They perform the job in hand with calmer deliberation than men."

As far as emotion is concerned, science calls it a draw.

10. No matter what you thought all along, women can't understand men as well as men understand women!

The girls are commonly supposed to be the mysterious, inscrutable sex. And conversely, we've always been told that any female can read any man like a book. Sorry, but this notion is all wrong.

Richard C. Cowden of the Veterans Administration Hospital in Gulfport, Miss., gave the famous California Test of Personality to a large group of couples who had been married at least 18 months. The test consists of dozens of scientifically de-

signed questions, answers to which reveal an individual's psychological makeup. Each person took the test twice—the initial time supplying his or her own answers, the second time trying to guess what the mate would reply.

The results flabbergasted Mr. Cowden, who thought his study would confirm what people thought all along. It didn't. It showed, instead, that men had a far deeper insight into the minds of women than the ladies had in men's!

And that, class, is the latest scientific dope on women. They're different than men, it seems—a whole lot more different than you suspected. And if you want to show this article to your wife, do so at your own risk. •

Fun From Your Recorder

[*Continued from page* 89]

audible instructions—straight from recording to stove—and if the dish pleases the family, she transfers it to her recipe file.

From an educational point of view, tape recorders are invaluable. At UCLA, many professors permit students to bring small recorders to lectures. Note-taking is often unsatisfactory as the student may miss a point while noting a previous one. A tape recorder is also an excellent way for a student who is ill to keep up with his work.

In the home, a tape recorder facilitates a child's studies. Let him read his homework aloud when it's completed, and record it. It will help him to remember his lessons.

Home recordings, too, can make a child's music lessons a pleasure instead of a chore. A recording of early practice sessions, followed by a recording of progress, can provide real encouragement.

For a serious music student, a recorder helps enormously in showing small persistent defects he can't possibly hear while he's performing. Here the tape recorder should be used by the student alone, with the privilege of wiping off after he's played back for his own use.

How about practicing for that speech you have to give before your club? Or learning lines for the school Christmas play? Want a better French or Spanish accent? Try reading to the tape recorder and you'll catch the spots where you make consistent mistakes.

If you don't already own a tape recorder, you may wish to buy one. Average price of home machines is slightly under $200. Time payments are possible but nearly everyone buys on a cash price basis.

Tape recorders vary in weight from a few pounds (battery-operated) to 40 pounds or more for the larger home portables. Most current models are designed to record at slow or fast speed—that is, 3¾ or 7½ ips (inches per second). Some battery machines record at 1¾ ips but these are not versatile, so be careful.

Most modern machines are dual track, recording on both edges of recording tape. Single track machines do exist, which means a tape only runs through once and can't be reversed. Watch this, too!

The major problem with foreign-made machines is in repair parts and servicing. A good dealer won't handle anything he can't service. Sony (Japanese), Norelco (Dutch) and Tandberg (Swedish) are all good quality machines and can easily be serviced in America.

The best guide is to know which machines rank among best-sellers. Most popular in the under-$200 class are: Revere, Wollensack, Pentron and the new Bell & Howell; $200-$300, Norelco, Tandberg and a bigger Revere. The home group runs up to about $350.

From $350-$500 you're buying semi-professional equipment; professional equipment (which doesn't rule out home use) runs from $500 to several thousand dollars.

Remember, like any piece of electronic equipment, tape recorder quality is only as good as its cheapest component. Manufacturers economize in microphone and speaker and most machines will record a better quality than they can reproduce. Don't expect hi-fi sound from modestly-priced equipment.

There are many tape recorder accessories. Most dealers will advise a better quality mike than the one with the set. The cost is between $30 and $50 but it isn't needed if your prime use is for audibility alone.

A better speaker is a welcome addition, too. Relatively unimportant for speech, it's essential for music—but if you already have a good hi-fi set-up, or adequate speaker, cables can be bought to hook the recorder to existing equipment. A good

speaker runs from $30 up to several hundred dollars.

If you use your recorder for study, interviews or research, you may want a foot pedal to start and stop the machine. These cost under $20. However, not all machines are designed for foot-pedals.

Another accessory (for privacy of playback) is the earpiece or headphone, about $5 to $7.

Most popular tapes are Audio, Scotch and Reeves. The seven-inch reel is preferred by most home users in standard 1,200 foot, long-play 1,800 foot or double-play 2,400 foot size. On a dual track machine, you'll get from one to two hours a side, depending on whether you're recording voice at 3¾ or music at 7½. Tape prices list at $2.45, $3.67 and $8.00 respectively, but in most large cities you may find good buys at discount houses.

When you've purchased a tape recorder and learned to operate it, still more uses will come to mind. A relative or child in the hospital can enjoy hours of talk with friends by a tape recording made when time permits.

Julie Andrews, star of My Fair Lady, dictated letters to her family in England twice a week via her tape recorder during her months in New York.

Once, when I was separated from my small daughter on her birthday, I made a special birthday tape—a snatch of music from a top composer, a few bars of a song from a pop singer, and so on—all prefaced by a few words specially "for Suzy," wishing her a happy birthday.

You'll find a tape recorder invaluable for training pets! Record instructions and leave your dog alone in the room with the recorder. You'll be astonished at the gains he makes when he thinks he's alone. Dogs can be self-conscious, too! Tape recorders also train parakeets and love birds to enlarge their vocabulary, and encourage your canary to sing.

By now, we hope you've made up your mind on the type of recorder you want, and even more important—what you'll do with it. Remember, to get the most use and pleasure out of a recorder, there's just one thing you must not do.

Do *not* put your recorder away, out of sight. Once it gets into a cupboard or closet, you'll groan mentally at the idea of getting it out, dusting, searching for reels, setting up and having to unplug a lamp in order to plug in the recorder.

The day you bring home a tape recorder—place it in a permanent spot in your living room or den. Set it up with reels conveniently at hand and microphone plugged in—and you'll find that when all that's required is turning a switch or pressing a button, using the recorder will be as simple as taking a book from a shelf. We'll guarantee that you'll find plenty of uses for it—for fun and profit. •

Surf Fishing For Stripers

[*Continued from page* 79]

very prevalent bait fish is the silverside or tinsel fish. And that's exactly what they look like—Christmas tree tinsel gleaming in the ocean. Actually they are small—two- to four-inch, very streamlined—fish that glitter in the water like silver. They are especially numerous in the surf during the fall months.

The sand eel, mentioned above, is a pencil-thin, silvery, greenbacked fish rarely longer than four inches and most abundant in the fall but like mullets, around all summer. They dive in and out of loose bottom sand in search of all kinds of tiny marine

More than 6,000 readers of MECHANIX ILLUSTRATED have started to build this telescope. With it you can see the moons of Jupiter and the craters in the Moon. It can be built for less than $30.00. A complete set of plans including drawings, photographs and instructions is available. Send $2.00 to MI Plans Service, Fawcett Building, Greenwich, Conn. Plan No. P-6.

life close to shore and stripers love them. "Find the little fellows," Red Connelly used to say to neophyte surf fishermen, "and the big ones won't be far behind."

Red believed in finding a concentration of bait fish, then setting up camp on the beach and if need be, remaining for 12 or more hours for the big ones to come. I remember Red with his old battered beach buggy, his big striped orange and black umbrella and his faded camp stool sitting on the beach in front of a school of bait waiting for the stripers to find them. He liked to sit and read a good book while he waited where he knew the stripers would come sooner or later. "This way, I get my reading and my fishing done together," he would say with a grin. He took as many big stripers as any angler I ever knew. His way takes more patience than most of us possess. But it offers dandy relaxation.

The best and most exciting way that I know of fooling stripers in the surf is to locate a large school of herring. Then put a jig on the end of your leader and cast it right smack into the school. Jerk it back fast and try your best to snag or foul hook a bait. When you do, just let the struggling bait flounder around on your hook and see what happens. The chances are that the biggest, ugliest and toughest old striper around will fall all over your speared herring, then when she feels the hook, start for the coast of Spain with all stops pulled (all of the big ones are shes, and much fiercer than the males).

Best lures: When herring are surfacing 200 or more feet out, blunt end, wide flaring jigs one to three inches long; when in just beyond the breakers, stubby, light-colored fresh-water bass plugs. If herring are big, use three- to four-ounce saltwater plugs.

When a big striper nails your bait, set the hook, then raise your rod high and let her go—or something's going to give and most likely it'll be your pet rod. She makes a terrific run and strips line off so fast it would burn your fingers or maybe break them to touch it. Let her go, then work her in slowly and carefully as you can. It sometimes takes half an hour or longer to beach a really big striper.

Another highly productive method of catching stripers off guard is to locate a school of mullet playing flying fish behind the breakers. But don't cast your lures to the mullets. The big fish have learned by experience that mullets are too fast for them, so they hide out in ambush, ready to pounce on passing single mullets.

Instead, look for hideouts: jetties, rocks, bars, ends of gullies and holes in the sand. Cast your lure to these and bring it back fast. This gives the illusion of some careless mullet flashing past and sends the hiding striper into instant action. Best lure: thin tin squid weighing two to three ounces, painted dark blue on top, or heavy plugs designed to exactly imitate these little speed demons.

When you see big fish feeding in shore, even right in the surf, with no schools of bait fish visible, look for sand eels. Get a squid in the shape of a pencil-thin piece of block tin, four or five inches long that you've painted green on top and dressed with white feathers. Then cast it into the surf and bump it along the bottom. It should drive those stripers nuts.

When you find silversides or tinsel fish attracting stripers the lures that make the big killings are small tin squids, little silver wobbling spoons and white bucktails. Cast these right into the schools of silversides and retrieve at moderate to fast speed.

What is the best tackle for the beginner? I feel that he will get a lot more fun out of a moderately heavy two-handed spinning outfit than out of a heavy beach rod. I like a rod between eight and nine feet, weighing around 10 ounces and fairly springy. It must have fittings that will stand salt water, but even then it is up to you to wash it in fresh water after each day's use.

The reel should be medium sized and of the salt-water type that will handle up to 300 yards of eight and ten pound test nylon braided line. This also should be washed in fresh water after each exposure to the sea. Such an outfit will play and kill stripers up to 30 pounds and also give plenty of fun with the junior graders in the five pound class. When used with streamlined jigs you can put a lure way out there for 250 feet or maybe more as you gain experience.

When making long casts set your reel drag for half the strength of your line. For short casts set it for one third the line strength. And be sure to use a leader, a

good strong wire one with swivel, and keep the lures from twisting your line. Stripers swallow lures so deep that lines fray and break as they pull against tough jaws. A lot of anglers scoff at leaders. But they are a must for beginners—and a lot of old-timers won't go out without them, including yours truly.

For those with an eye to fishing Cape Cod this fall, one of the nation's hottest striper spots, there is a free salt-water fishing guide issued by the Massachusetts Department of Commerce, 334 Boylston Street, Boston, Mass.

Happy fishing! •

America's Small Cars

[*Continued from page* 58]

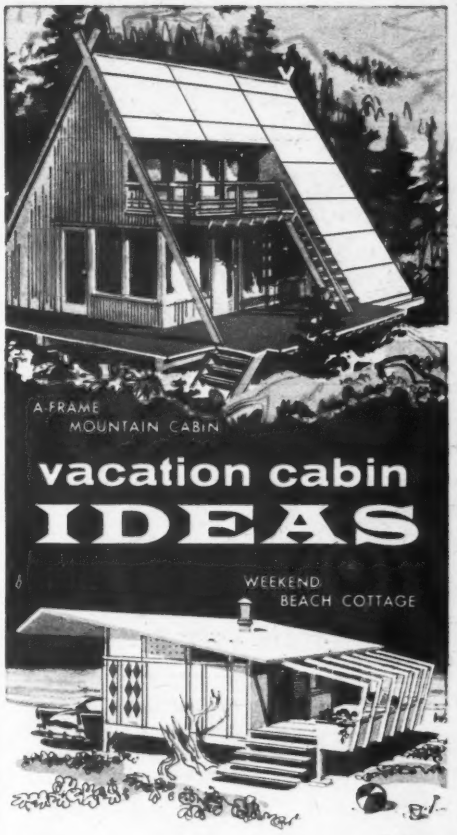
imports, a tremendous jump from 98,000 in '56. The first-half figure for 1958 (worst since 1952 for native U. S. cars) was 160,000, indicating a 300,000 year. (The figures include all foreign cars, both large and small.) Some prophets predict an eventual market of 500,000. In a 6,000,000-car year that would mean one in every 12 cars sold in the U. S. was foreign-built.

Whatever the decision, Detroit's version of a small economy car is not likely to be very small or very cheap to buy. Overall length probably would be between Dauphine-Volkswagen (155-160 inches overall) and the low-priced three (207-inch average); its weight about 2,500 lbs. and its engine around 100 hp. Price? Probably just a shade below the cheapest Chevy, Plymouth or Ford.

Both GM and Ford have built and tested prototype small cars. GM reportedly has a model powered by an air-cooled, horizontally-opposed, six-cylinder engine mounted in the rear. Ford's test car, insiders say, has a six-cylinder engine in front with an experimental front-wheel drive. Either style means no driveshaft hump, flat floors, low silhouette.

Chrysler, at this writing, still is sitting on the fence watching the other two-thirds of the Big Three warily circling each other like two gamecocks in the pit. The Forward Look people reportedly have a small car on the drawing boards and also have been talking with foreign manufacturers about various deals.

[*Continued on page* 158]



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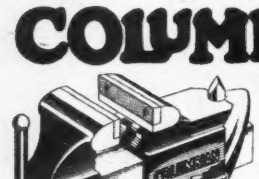

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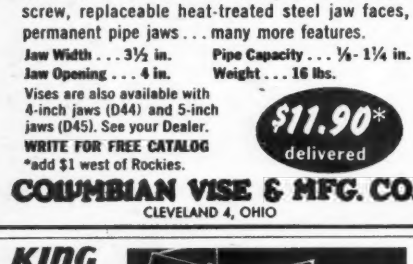

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The Vise

[*Continued from page* 130]

anvil. Some also incorporate a cut-off tool which is set in the anvil. This is a hardened rod with the projecting end tapering to a cold-chisel point over which wire and other materials can be placed and cut with blows from a hammer.

Most machinist's vises have removable jaw inserts which are striated or knurled for better gripping. It's common practice, however, to cover the jaws with soft metal shields of copper, brass or aluminum to protect stock while being held.

The machinist's vise may have either a fixed or swivel base. The latter permits full choice of position. A built-in locking devise quickly releases the vise for turning and holds it rigidly in place when set.

These vises are so constructed that they can grip flat or round work equally well because of their specially shaped serrated pipe jaws which "wrap around" cylindrical stock and grip it when the vise is tightened.

The drill press vise is a special design with the frame sides finished parallel and at right angles to the bottom. Jaw faces may be flat planes or else be V-cut down the center to hold round stock. V-block inserts are generally available for planed jaws. The bases of drill vises are slotted or otherwise shaped for clamping to the drill press table. They are precision tools insofar as they hold stock concentrically aligned with the drill press spindle.

The miter vise is particularly suitable for making picture frames. This vise has two sets of jaws at right angles to each other to allow members of a mitered joint to be securely held in position for gluing or mailing.

The pipe vise, designed to hold pipe for cutting and threading, is used primarily by plumbers. For most home workshops the pipe jaws on the machinist's vise will suffice for those occasional jobs that require this design.

The wedge vise is merely a length of U-shaped channel with one side tapering to a narrow neck at one end.

Remember, a vise is a tool. Treat it well. Use it for those jobs it was designed to do. Keep screw mechanisms clean and oiled. A quality, well-cared-for vise should last a lifetime.—*R. J. DeCristoforo*

Photography Today

[*Continued from page* 140]

technically-minded, they reach their peak light output in 15 milliseconds. They are about one-fourth the size of the No. 5 lamps and have a sub-miniature base which means an adapter is required if they are to be fired in the conventional five-inch reflector designed for No. 5 and No. 25 lamps.

The exposure index for these lamps, at 1/100th of a second, is 80 for Kodachrome; 100 for Anscochrome; 160 for Verichrome Pan; 200 for Superpan Press and 300 for Tri X film. All of these numbers are based upon the use of the lamps in a properly designed three-inch polished reflector.

Tru-Site. During a visit to the Eastman store in New York City, we were very much intrigued by a dramatic display of two framed photographs. One of the picture frames used a sheet of ordinary glass, while the other had a most unconventional glass which seemed to absorb and did not reflect the window lights and store lighting fixtures the way the other sheet of glass did.

We borrowed the two frames and photographed them in identical positions, as illustrated in the picture in the lower right-hand corner of page 141. Note that the right-hand picture has a strong specular reflection of one of the taking lights, while the frame on the left shows no reflection at all. The glass we found out is called Tru-Site. It is made in 8x10, 11x14 and 16x20-inch sizes by the Dearborn Glass Company of 6600 So. Harlem Avenue, Bedford Park, Illinois. Prices for these three sizes are 85c, $1.60 and $3.25 per sheet. The retail outlet in New York City is the Eastman Kodak store at 1 West 39th Street. •

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America's Small Cars

[*Continued from page* 155]

You don't have to look hard to find out why U. S. companies are hesitant to plunge into a small-car rat race. Even a 500,000-car market is not large when split up among both foreign and domestic manufacturers. Also, the profit margin on "economy" cars is extremely narrow.

Sky-high Detroit labor and supply costs might drive the retail price up, destroying the whole idea, or make the profits so slim that dealers would not push the line.

One commentator put it this way: "It may hurt but we should admit that other countries *can* do some things better. One is produce a high-quality economy car at a low price."

Best guess at this point is that a small car will be brought out for 1960 . . . and that Detroit will be sorry later. A royal flush in the hand isn't worth much if the pot on the table is the small economy size. •

Tom Tests The Taunus

[*Continued from page* 75]

of a lot of bad places (including Texas Guinan's in a raid) but this rig wasn't having any of it. I've seen more traction on a tricycle.

That night the Taunus communed with nature—the deer, rabbits, pheasants and perhaps a wood nymph or two. We didn't even remove the keys—any guy who could get it out of that field was welcome to it. Early next morning my trusty Jeep entered the field and returned the Taunus to the highway again—at the end of a rope. This is not the car I'd pick for the Alpine Rally or to go over the snowy Alps, unless a Porsche engine was tucked into the trunk for a booster.

The seats are excellent—of the Detroit-type—but the legroom is typical Detroit, too, meaning short. The instrument controls seem to be the answer to "whatever happened to all those mah-jongg sets?" They look like mah-jongg pieces and are quite ornamental, in an off-beat sort of way. The paint on this car is truly fine and the finish is better than anything Michigan has seen since Soapy Williams snapped an oar at Princeton. One nice touch is a little spring-loaded chrome flap, similar to a

piano hinge, that closes over the opening of the window channels to keep out dust and dirt when the window is all the way down. It opens up instantly when the window rolls up.

Performance-wise, the Taunus is powered by a four-cylinder, 103-cubic-inch engine with a compression ratio of 7.1:1. It develops 97 foot-pounds of torque and cruises nicely at 60-65 mph, although you can push it to 70 mph without discomfort and if you feel giddy it'll go right up to 80 mph, but this is not the recommended cruising speed, unless you happen to be out for your last short cruise. Zero to 30 mph is a comparatively rapid 5.7 seconds; 0-60 takes slightly longer, 17.4 seconds.

This little bucket is an attractive small car that will hit a lot of the gals right between the eyes on its looks alone. It'll make a great second car for around town and suburban use, as it handles without any trouble at all (if you don't mistake that brake pedal for a clutch during a gear shift). Four normal-size people would be very comfortable on reasonable-length trips and the gas consumption will be just about half that of the big gluttonous monster parked in the barn. While my crystal ball is not only smoky but badly cracked, I feel the Taunus will score in the big cities like Elvis in a girls' cell block, for a number of reasons. One of them is the tie-up with the Ford Motor Company which is a lot better than a promissory service note from Glotten, Totten and Finkle of East Munich.

We've brought a lot of small car tests to you during the last year and while the Taunus is neither the fastest, cheapest or most roadable, it is an interesting and well screwed-together little character. It's highly doubtful that it will win any major un-rigged rallies or speed trials and it'll never be known as the Snow King, but it should prove popular with those who want a well-styled small car backed by a company with a good-looking bank account. •

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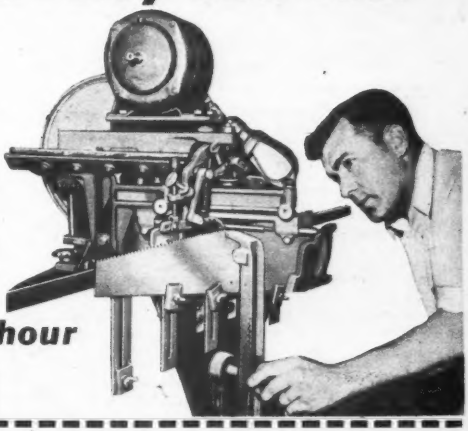

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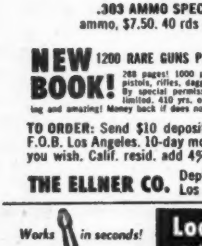

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WHAT IT COSTS TO BE A HAM

October

MECHANIX ILLUSTRATED

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Little Soldiers

[*Continued from page 77*]

by the U. S. Government Printing Office.

Beginners who become war game addicts will soon learn the name of Jack Scruby of Tipton, Calif. Scruby, who publishes a quarterly, 50-page sheet called War Game Digest, says that war games with military miniatures are divided into three categories: modern warfare, musket period warfare and ancient warfare. Regardless of period, two men take equal forces of lead soldiers into battle. The game can be played on the floor, table top, sand box or, as in Australia, on a tennis court with up to 1,000 figures on a side.

Taking alternate turns, the table top generals move their armies forward to fight each other. A battle with about 200 soldiers on a side can consume four or five hours. Artillery and rifle fire is controlled by fire tables, dice or other variations. Commanders are often forbidden to move their troops because of "morale problems" that arise during a contest. Such authenticities as first aid stations and prisoners of war are also included.

The only book about this hobby, Making And Collecting Military Miniatures, is authored by Bob Bard of Baltimore, Md. The book covers such subjects as converting a miniature soldier into a museum piece, making an original model, casting of models, painting, making dioramas, table-top photography, source material and war games. The book may be ordered from Robert M. McBride & Co., 235 Fourth Avenue, New York 3, N. Y., or from Bob Bard, Box 1463, Baltimore 3, Md. Price is $5.00.

Collectors usually begin with a few commercial figures purchased from dealers, larger department stores or better hobby shops. The cheapest ones cost about a quarter each, while some custom jobs can run well over $100. Later they begin to wonder about making their own. They clutter the dining room table with molds, carving tools and research material; spill hot lead all over the stove and then are invariably disappointed with the results. But practice usually brings proficiency. The cost is small compared to even the cheapest commercial figures and the thrill of creating these miniatures, collectors say, makes first failures easily forgotten.

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Little Soldiers

Figures are constructed by first making a wax, clay or wooden model, usually copied from an illustration. This is placed in a mold. After it hardens the molten lead is poured in. Once the figure is cast it is then filed down to perfection. Tooth paste tubes, sheet copper and other pliable metals are used to make trappings and accessories and are soldered on. Then the figures are painted. Foot soldiers are usually about two and one-eighth inches tall.

Some collectors use plaster of Paris for molds, while others prefer dental stone, claiming that they can get more good castings without loss of detail. Still others use Durham's water putty or Old English crack filler.

Beginners also have the talents and know-how of other collectors at their service. The societies and members are always willing to furnish information. The Southern California society may be contacted by writing Albert Thompson, 3592 Woodcliff Rd., Sherman Oaks, Calif. There is also another society in Philadelphia and one in Illinois. A professional group in Washington, D. C., known as the Military Collectors and Historians, has a restricted membership. However, non-members may subscribe to its quarterly journal which carried ads of major dealers, plus authorative articles on phases of military history.

In Europe each country seems to have its family that has been making these figures for centuries. One enterprising French company even put Napoleonic figures and coloring instructions in its coffee cans, and gave valuable prizes for the most authentically colored figure.

A new movement is on to portray the faces of real people on miniatures. Persons boasting an ancestor in one of our early wars can have a miniature of great-grand-daddy in uniform. All you need is a photo or other picture of your ancestor and the name of his outfit. •

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Their Business—Cake

[Continued from page 71]

$450 in the third year and installed in Grace's kitchen.

As the business grew, Rush, Inc. had to borrow money to expand. The Rushes got a student architect to design a rectangular 45x28-foot building in 1924 and built a $6,700 plant.

One of Wilfred Rush's early contributions was a special fruit processing method which he worked out with a University of California chemistry professor. It eliminated the use of preservatives by filling the fruit cells with 78 per cent sugar solids. As a result, the fruit looks and tastes better. Today they sell several thousand gift boxes of these glaced fruits.

The decision to sell Rush products through department stores was a revolutionary idea conceived by Wilfred.

In those days only Macy's in New York and Marshall Field's in Chicago had a food counter. It was Rush who pioneered the food department in department stores all over the country, opening up this area for other food producers. He made up a display of the entire Rush line, shot a picture and took it around to managers of department stores. They liked it and Rush products started food departments in such famous stores as John Wanamaker in Philadelphia, Miller and Rhodes in Richmond and H. & S. Pogue in Cincinnati.

In the mid-20's Rush pioneered gift boxes for Christmas. The assortment included fruit cake, nuts, brandy sauce and a marmalade.

Wilfred thought of selling the gift box through clubs and industry. His first account was the famous Detroit Athletic Club which during the first year sold 1,100 boxes at $12.50 each. Today gift boxes, selling through delicatessens, department stores, clubs and industry.

Rush, Inc. is now housed in a $50,000 building erected in 1936. For building material they used a washable, hollow brick which provides good weather insulation.

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The two-story plant is about 275 feet long by 70 feet wide.

The offices and packing rooms are on the upper floor. All cooking is done on the lower level. One downstairs room contains the huge copper kettles in which syrup and conserves are cooked. The main kitchen, where everything else is prepared, has the large revolving oven, mixing machines, barrels with fruit, sauce bottle-filling machines and the rest of the cooking and baking equipment. At the other end are two redwood panelled cold storage rooms.

Rush helps to keep costs down by adjusting the baking schedule. He says, "We try to bake most of our cakes when the ingredients are at their cheapest. We use real eggs and they are about 20 cents less a dozen in April than in August. We also buy our nuts right after Christmas."

Grace Rush's initiative and cooking flair, coupled with Wilfred's sound business sense, have increased sales every year except during the first crucial depression years. The Rush boys have continued to break records. The success story of Grace Rush, Inc. is really a family affair. •

Roll Your Own Business

[*Continued from page* 95]

verted station wagons to house trailers, pick-up trucks and rebuilt sedans from which they peddle food, clothing, business and repair services, amusements and practically anything else you can name.

Joe Schmidt of Norwood, Ohio, for example, was a young veteran fresh out of World War II when he got the idea for his rolling key shop. Catering to hapless motorists who often locked themselves out of their cars, Joe put himself on a 24-hour call basis. Business boomed and today Joe's three two-way radio-equipped trucks answer distress calls in his area.

Then there is the Good Humor Corp., a fantastically successful business. It was 20 years ago that Harry Burt got his idea for ice cream on a stick and decided to take his wares directly to the public in parks, on streets and highways and resort areas. Today, "Good Humor" is a rallying cry for the nation's tots—and most of the grown-ups too!

[*Continued on page* 167]

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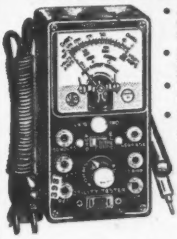

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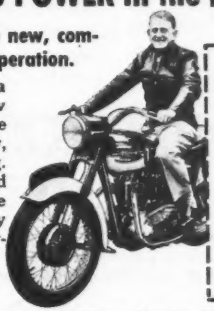

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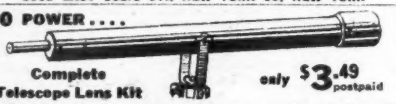

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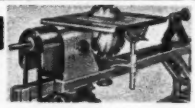

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Telescope Maker's Page

[*Continued from page* 149]

constellation selected, say, Andromeda, which is marked +40 on this particular dial. The metal arrow on top of the axis is then moved to +40. Sighting along the metal arrow will enable you to see the constellation of Andromeda.

The Sky View is made by the Bellevue Manufacturing Company of Bellevue, Ohio and sells for $10.

The Star Pointer. This device, made out of heavy cardboard, has what we believe to be a very good feature, namely, it can be adjusted to the observer's latitude. Adjustments range from 26° to 54° N. latitude. The Star Pointer is made by the Starcraft Company of Cleveland, Ohio and sells for $5, complete with a booklet on star charts and one on earth satellites.

Star Guide. This is a map of the heavens in the heretofore more or less conventional style of a rotating disk on which the stars are visible by means of a cutout in a cover. To use, the observer points the cover due North and then rotates the disk so that his hour of observation coincides with the day of the month marked on the edge of the cover. It is an inexpensive device, selling for only $1.80 postpaid and is a good beginner's guide to the stars. It is made by the Canlen Company of 1239 Monroe Avenue, Wyomissing, Pa.

Sky Master. This is a globe of the heavens in kit form. The gores of the sphere are printed on heavy black paper. They are cut out as shown in the photograph and then pasted up to make a model of the sky. Sky Master is made by Capt. J. Ellrich, 781 Fairview Avenue, Fairview, N. J. It sells for $5, unassembled.

Murals. Large photographic reproductions of the most interesting parts of the heavens are available as large-size murals from Astro Murals, 231 West 58 Street, New York 19, N. Y. For example the 2x3 foot section of the moon shown in the photograph sells for $6, while a 3x6 foot reproduction costs $15.—*R.B.*

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WELDER

Roll Your Own Business

[*Continued from page* 164]

How do you get started in a rolling enterprise? The first thing you need is the idea, a vehicle and perhaps some borrowed capital to stock up equipment and supplies.

You should make a careful study of the market possibilities where you intend to sell. Talk with local businessmen and chamber of commerce officials. Are some businesses falling off in town because of difficult parking conditions?

If you want to start a personal study for your own rolling business, here are some tips from the experts on how to go about it:

Visit your city's local chamber of commerce or city clerk. Make sure there are no legal restrictions, such as zoning laws, that will apply to you.

Write to Mobile Homes Manufacturers Assoc., 20 N. Wacker Dr., Chicago 6, Ill., for information about the potentials in a mobile home or trailer.

Write to the U. S. Government Printing office, Superintendent of Documents, Washington 25, D. C., for PL 62, Commerce, Business, a guide to scores of useful government publications in the field of business and trade.

Check with your local chamber of commerce on the number and value of homes in your area, types of occupations, family income, etc., for ideas on what might be a profitable mobile business.

Here's a list of businesses on wheels that have been successful in various localities throughout the country. Maybe there's a market for a similar enterprise in your locale:

An automatic Mobileteria which brings the lunch room, including hot foods, to construction workers.

A modern medical laboratory for growing communities which lack hospitals.

A rolling meat market which brings fresh meat to housewives on a regular schedule.

A traveling bakery which sells hot rolls made on trailer oven stoves.

A TV repair shop for on-the-spot repairs.

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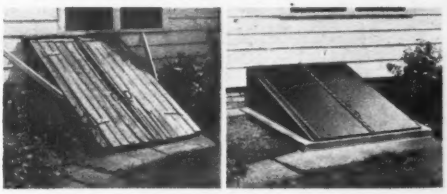

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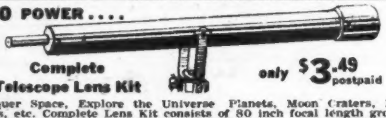

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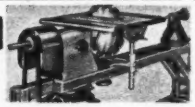

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Telescope Maker's Page

[*Continued from page* 149]

constellation selected, say, Andromeda, which is marked +40 on this particular dial. The metal arrow on top of the axis is then moved to +40. Sighting along the metal arrow will enable you to see the constellation of Andromeda.

The Sky View is made by the Bellevue Manufacturing Company of Bellevue, Ohio and sells for $10.

The Star Pointer. This device, made out of heavy cardboard, has what we believe to be a very good feature, namely, it can be adjusted to the observer's latitude. Adjustments range from 26° to 54° N. latitude. The Star Pointer is made by the Starcraft Company of Cleveland, Ohio and sells for $5, complete with a booklet on star charts and one on earth satellites.

Star Guide. This is a map of the heavens in the heretofore more or less conventional style of a rotating disk on which the stars are visible by means of a cutout in a cover. To use, the observer points the cover due North and then rotates the disk so that his hour of observation coincides with the day of the month marked on the edge of the cover. It is an inexpensive device, selling for only $1.80 postpaid and is a good beginner's guide to the stars. It is made by the Canlen Company of 1239 Monroe Avenue, Wyomissing, Pa.

Sky Master. This is a globe of the heavens in kit form. The gores of the sphere are printed on heavy black paper. They are cut out as shown in the photograph and then pasted up to make a model of the sky. Sky Master is made by Capt. J. Ellrich, 781 Fairview Avenue, Fairview, N. J. It sells for $5, unassembled.

Murals. Large photographic reproductions of the most interesting parts of the heavens are available as large-size murals from Astro Murals, 231 West 58 Street, New York 19, N. Y. For example the 2x3 foot section of the moon shown in the photograph sells for $6, while a 3x6 foot reproduction costs $15.—*R.B.*

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WELDER

Roll Your Own Business

[*Continued from page* 164]

How do you get started in a rolling enterprise? The first thing you need is the idea, a vehicle and perhaps some borrowed capital to stock up equipment and supplies.

You should make a careful study of the market possibilities where you intend to sell. Talk with local businessmen and chamber of commerce officials. Are some businesses falling off in town because of difficult parking conditions?

If you want to start a personal study for your own rolling business, here are some tips from the experts on how to go about it:

Visit your city's local chamber of commerce or city clerk. Make sure there are no legal restrictions, such as zoning laws, that will apply to you.

Write to Mobile Homes Manufacturers Assoc., 20 N. Wacker Dr., Chicago 6, Ill., for information about the potentials in a mobile home or trailer.

Write to the U. S. Government Printing office, Superintendent of Documents, Washington 25, D. C., for PL 62, Commerce, Business, a guide to scores of useful government publications in the field of business and trade.

Check with your local chamber of commerce on the number and value of homes in your area, types of occupations, family income, etc., for ideas on what might be a profitable mobile business.

Here's a list of businesses on wheels that have been successful in various localities throughout the country. Maybe there's a market for a similar enterprise in your locale:

An automatic Mobileteria which brings the lunch room, including hot foods, to construction workers.

A modern medical laboratory for growing communities which lack hospitals.

A rolling meat market which brings fresh meat to housewives on a regular schedule.

A traveling bakery which sells hot rolls made on trailer oven stoves.

A TV repair shop for on-the-spot repairs.

Look around your home town. You may discover a market waiting for the right person to roll along and cash in. It might be you. •

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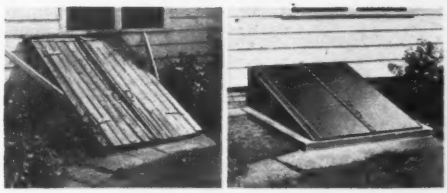

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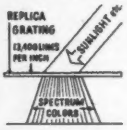

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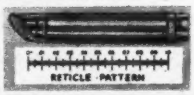

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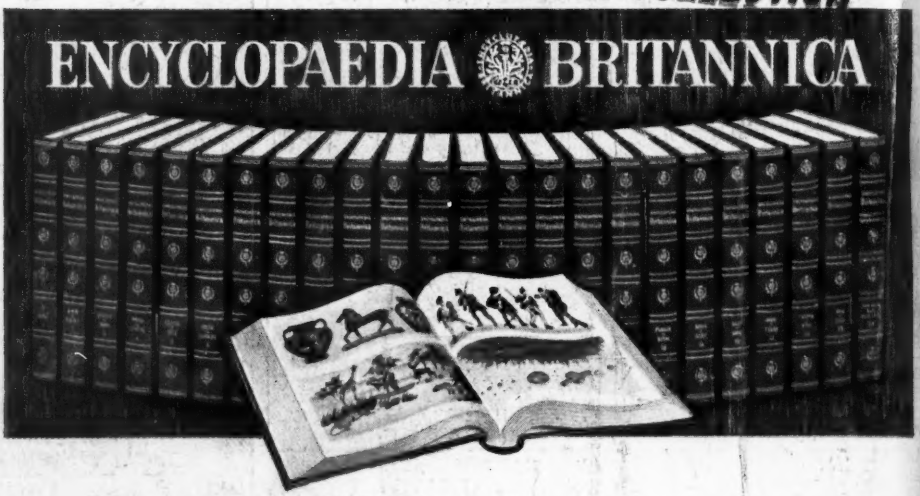

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